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STRUCTURAL ANALYSIS OF THE WRITTEN COMPOSITION OF
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AN ANALYSIS OF CHILDREN'S WRITTEN LANGUAGE DEVELOPMENT RELATED TO GRADE LEVEL, AGE, AND SEX WAS PERFORMED (1) TO DISCOVER THE SEQUENTIAL STAGES OF LANGUAGE DEVELOPMENT AS REVEALED IN BASIC STRUCTURAL PATTERNS IN WRITTEN COMPOSITIONS OF INTERMEDIATE GRADE CHILDREN AND (2) TO ESTABLISH METHODS AND PROCEDURES AND PROVIDE RESEARCH INFORMATION ON THE GROWTH AND MATURATION OF CHILDREN'S WRITTEN LANGUAGE DEVELOPMENT. COMPOSITIONS FROM 50 BOYS AND 50 GIRLS WERE COLLECTED FOR THE FOURTH, FIFTH, AND SIXTH GRADES FOR A TOTAL OF 300 COMPOSITIONS. THE COMPOSITIONS WERE ANALYZED TO DETERMINE TYPE AND FREQUENCY OF STRUCTURAL PATTERNS WITHIN SENTENCES. ANALYSIS SHOWED THAT THE NOUN-VERB-NOUN PATTERN WAS USED MORE FREQUENTLY THAN ANY OF THE OTHER PATTERNS. THE SIMPLER NOUN-VERB PATTERN APPEARED SECOND MOST FREQUENTLY. ALTHOUGH THE MOST COMPLEX STRUCTURAL PATTERN, NOUN-VERB-NOUN-NOUN, WAS FOUND LESS FREQUENTLY THAN THE OTHER PATTERNS, IT WAS USED BY CHILDREN AT ALL OF THE INTERMEDIATE GRADE LEVELS. FINDINGS SHOWED SIGNIFICANT DIFFERENCES IN THE FREQUENCY OF PATTERN USAGE AS COMPARED TO SEX AND GRADE. (JM)

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# STRUCTURAL ANALYSIS OF THE WRITTEN COMPOSITION OF INTERMEDIATE GRADE CHILDREN

Cooperative Research Project No. S-057

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# STRUCTURAL ANALYSIS OF THE WRITTEN
# COMPOSITION OF INTERMEDIATE
# GRADE CHILDREN

An Abstract

## Statement of the Problem

The language development of children is sequential and cumulative. As children develop their expressive abilities, they pass through specific stages of development which appear to be on a continuum. Identification of these stages of language development is necessary if a program of instruction based upon each individual's developmental stage and language potential is to be provided.

### Purpose

This pilot study was initiated (1) to identify basic structural patterns in compositions written by intermediate grade children, (2) to establish evidence for determining growth gradients in written composition, and (3) to develop indices of modification which would reveal levels of maturity in their written language which might facilitate scholastic organization of written language programs.

## Methods and Procedures

Four hundred, thirty-eight compositions were gathered from the intermediate grades in two schools in Allentown, Pennsylvania, and Bethlehem, Pennsylvania.

One hundred compositions (50 boys and 50 girls) were randomly selected from each of the grades. The compositions for the boys and girls in each group of fifty were divided into two equal parts: older and younger.

The first phase of analysis required the division of the children's sentences into workable thought units and then marking the independent and dependent clauses.

The structural patterns in the clauses were then identified according to the system developed by Paul Roberts.

Sentences were examined also for inverted statements and inverted questions.

The second phase of analysis was dependent upon the frequency with which various sentence modifiers occurred. A twenty per cent random sample of all the sentences written was used.

An analysis was also made of the total number of sentences written.

The tabulated data were subjected to a multiple-linear regression program (which yielded means, standard deviations and correlations) and an analysis of variance.

## Conclusions

In view of the delimitations of this pilot study, the following conclusions are warranted.

1. That the analysis of the structural patterns used by intermediate grade children in written composition reveals that significant differences exist in the frequency with which they use these patterns in terms of sex and grade. Age appears to be less useful in determining the frequency with which the basic structural patterns are used.
2. Intermediate grade children make use of all of the basic sentence patterns with the exception of the inverted question pattern.
3. Children in the intermediate grades make greater use of the noun-verb-noun pattern than they do of the less complex noun-verb pattern.
4. The extent to which the patterns are used seem to be affected more by sex than by grade or age. Girls made significantly greater use of four patterns than did the boys.

5. The number of years children spend in school has a greater effect upon the use of the patterns than does chronological age. In only one pattern, noun-verb (linking)-noun, was the main effect, Age, found to be significant.
6. Children in the intermediate grades make little use of the layers of modification in their writing.
7. Girls in the intermediate grades write more and make greater use of the more complex sentence patterns than do boys in the same grades.

# CHAPTER I

## INTRODUCTION

The teaching of written expression skills, an important component of any language arts program for children, must emphasize a sequence of thought within a grammatically structured framework. Early in life most children discover that simple sentence structures alone lack desired expressive qualities. Subsequently, they are quite responsive to experimentation with more complex and mature forms utilizing the enriching qualities of modification and subordination. The development of these refined processes of expression has become the basis for the structured language arts program within the elementary and secondary schools.

The initial language development of children is sequential, orderly, and cumulative. (Pennsylvania, 1949, p. 68) Children learn first to listen, then to talk, then to read, and ultimately to write. Thus, language has many facets which are interrelated and dependent upon each other. Present teaching methods exhibit little understanding of these relationships and until this understanding is achieved the problem of enhancing children's language development cannot effectively be solved.

Educators have organized language arts curricula to teach the supposed sequential development of these skills. Hatchett and Hughes (1964, p. 9) stated that:

> In determining goals for the language program, teachers must turn to two important sources: (1) the persistant personal needs of children and (2) the demands of society. A completely child-centered or completely society-centered program is equally unrealistic and inadequate. The study of children and society, then, is essential in determining goals, and this requires both research and reflection. Careful and complete investigation should be coupled with disciplined philosophical thinking to produce defensible goals.

Presently various grammatical structures are taught in the earliest grades and continued until the end of school. Although much verbal offering is paid to "meeting the child's needs" through structured curricula, in actuality this procedure frequently does not consider the child's real needs. Strickland states (1963, p. 170) "Our present teaching of English grammar presents many problems. Every teacher knows that it is not only time consuming but also completely ineffective." A program for the sequential teaching of skills could be developed from the results based on the analysis of the child's written structures at various grade levels.

Concern over the nature of the current pronouncements of the teaching of writing prompted the executive committee of the National Council of Teachers of English to publish a report of the known factors in this area. The result is a booklet, Research in Written Composition (Braddock, Lloyd-Jones and Schoer, 1963), which indicates that research on composition "is not highly developed". In fact, "...the field as a whole is laced with dreams, prejudices and make-shift operations." (Braddock, Lloyd-Jones and Schoer, 1963, p. 5)

In 1956 the Commission for English Curriculum expressed concern over the chronological development of structural skills by stating that "care must be taken in matters of sentence structure. . . not to push the children beyond their stages of development in written expression". This statement poses the question: What is the normal stage of development in written expression?

Research concerning the development of oral and written language has not revealed a conclusive answer to this question, although evidence does indicate that basic structural patterns exist within the framework of the written English language. (Conlin, 1961; Roberts, 1956) More knowledge concerning the gradients of growth in written language is needed for the organization of instructional programs based upon children's language maturation.

## Related Literature

Since the extensive study of language development has already been reviewed in several publications (Smith, 1944; McCarthy, 1954; Carroll, 1961) no attempt will be made here to reiterate all available research data. Only pertinent information from closely allied projects in both oral and written language will be presented.

### Oral Language

Because oral language development precedes and is bound closely to written expression, research in oral language must be considered to gain a full perspective of the entire language maturation process in children. Psychologists have indicated that when one writes something an active inner speech occurs which is inhibited at the level of muscular performance. (Strickland, 1963, p. 168) Thus, since writing is simply a way of representing speech, oral language may have some influence upon performance in written language.

Early researchers in the area of language development have carefully studied the successive stages in the development of speech. (Zyve, 1927; Nice, 1932; Davis, 1937; Young, 1941) The results of these studies have shown a progressive mastery of verbal skills reflected in vocabulary growth and increasing complexity of sentence structure. Smith (1944) reported that with maturity, the use of longer and more complex sentences occur and that there is an increase in the proportion of complex and compound sentences to simple sentences. This would seem to indicate that growth and maturity in written composition might be analyzed in terms of variation in sentence structure.

Templin (1957) examined 500 children three to eight years of age representing upper and lower socio-economic classes of both sexes. She found that the mean length of the remarks of eight-year-olds was over twice that of three-year-olds. Templin's data implied that the length of utterances was still increasing at the oldest age level examined. Eight year old children were found to be still progressing in the area of complexity of grammatical construction.

Loban (1961) analyzed sentence structure patterns utilized by children in oral expression. He (p. 133) states that "not pattern but what is done to achieve flexibility within the pattern proves to be a meaure of effectiveness and control of language at this level of language development".

Strickland's (1962) analysis of children's oral usage at each of the six elementary grade levels revealed the development of oral language patterns in relation to the structural patterns encountered in reading textbooks. Although this research dealt only with an analysis of the oral expression of elementary children (grades 1 to 6), implications can be drawn for an analysis of children's written expression. If sentence structural patterns can be identified and described in an analysis of children's oral expression, can patterns utilized by children in written expression also be identified? Can analysis reveal patterns of sentence elaboration and modification indicative of growth and maturation? What will be the effect on the language patterns used by intermediate grade children?

## Written Language

Studies of children's written language have indicated that the proportion of simple sentences decreases while the proportion of complex sentences increases with chronological age, although several studies have suggested the necessity for further research.

Hoppes (1933), through the analysis of sentences written by 386 Chicago children in grades three through six, found evidence of growth in sentence length and complexity. He concluded that since significant development in written language occurs in the elementary grades an analysis of this development in relation to sentence structure is possible.

LaBrant (1933), who examined 1,007 written compositions of persons with mental ages ranging from 101 months to superior adult level, concluded that chronological age influences the use of dependent clauses more than does mental age (as the use of dependent clauses increased in frequency and growing maturity, clarity and thought also increased commensurately). The findings of Frogner (1933), Bear (1939), and Heider and Heider (1940) also tend to support this theory.

Conlin (1961) has identified various sentence structural patterns which exist in the English language. He has considered parts of speech, not in their isolated nature, but in their structural contexts as communicative components of sentence structure. His work suggests that written composition can be analyzed in terms of these sentence structures.

Harrell(1957) found, by comparing certain aspects in the development of oral and written language expression of school age children, that the length of compositions increased with advance in age and that the length of clauses increased with age in both oral and written stories.

Sam (1962), in a study which attempted to identify growth gradients in the written language development of intermediate grade children, found that certain basic word patterns exist in the English language. Regardless of the grade level or sex of the writer and regardless of the length or complexity of the sentences analyzed, the proportions of parts of speech used remained relatively constant. He concluded that this basic word pattern could be indicative of other structural patterns inherent in the English language.

## Statement of the Problem

The language development of children is sequential and cumulative. As children develop in their ability to express themselves, both in an oral and written manner, they pass through specific stages of development which appear to be on a continuum. Identification of these stages of language development is necessary if a program of instruction based upon the individual's stage of development and language potential is to be provided.

### Purpose

This pilot study was initiated (1) to identify the basic structural patterns in compositions written by intermediate grade children, (2) to establish evidence for determining growth gradients in written composition, and (3) to develop indices of modification to reveal levels of maturity in their written language which might facilitate scholastic organization of written language programs.

### Objectives

An analysis of available literature concerning the perceptive and linguistic skills of children at various grade levels reveals a need for an analysis of children's written language development in terms of grade level, age, and sex. Thus, the major objectives of this study are (1) to discover the developmental structural variability patterns of written language of intermediate grade children and (2) to establish methods and procedures, and to provide research information concerning the growth and maturation of children's written language development.

# CHAPTER II

# METHOD AND PROCEDURES

## General Design

This descriptive study of intermediate grade children's written language development utilized a cross-sectional approach for the gathering of composition specimens.

## Collection of Compositions

Specimens of the written composition of the intermediate grade children were gathered from the Union Terrace Elementary School in Allentown, Pennsylvania, and the Calypso Elementary School in Bethlehem, Pennsylvania. One of these schools is located in a slightly above average socio-economic area and the other in a slightly below average area.

A uniform procedure for the gathering of the compositions was developed and recorded on a tape. This tape included all directions given to the children as well as a story used to motivate writing. (Appendix A) Sam (1962), had found that the use of a story provided a background of experience from which children would immediately draw conclusions for the development of their written responses.

The story related an incident in the life of Moravian frontier children during the middle of the Eighteenth Century. It was especially structured to describe the complete setting emphasizing the tools, household materials, and personal belongings available to the fictional characters, thus providing a background of information for each child. The story, which developed a realistic situation, stopped at a climactic point.

The children were asked to write what they would do in the situation if they were either of the characters in the story. The children were encouraged to spell the words the best they could rather than to interrupt their writing to ask for help.

The entire process from introduction to the collection of compositions required approximately thirty minutes in each classroom. This process required little effort on the part of the classroom teacher or the school administrator since the investigator conducted the entire gathering procedure.

A total of 438 compositions was collected corresponding to the total enrollment of children in the intermediate grades for both schools. (Table 1) After the compositions from both schools were combined in terms of sex and grade, one hundred compositions, fifty written by boys and fifty written by girls were randomly selected at each grade level. The compositions were numbered consecutively from 1 to 300. (Table 2) Upon completion of this procedure the compositions for the boys and girls in each group of 50 were placed in chronological order from the youngest child's composition to the composition of the oldest child. The first 25 were designated as those of younger children and the last 25 were designated as those of older children. This procedure made possible equal numbers for each cell in the factorial design used in the statistical treatment of the data.

Two of the 300 compositions selected for analysis were unreadable; they were recorded but not analyzed. One was illegible and the other was rejected because the writer possessed limited knowledge of the English language and apparently did not understand the directions.

In the analysis these compositions were given scores

## TABLE 1

## DISTRIBUTION OF TOTAL COMPOSITIONS COLLECTED BY CITY, GRADE, AND SEX

| Grade | Bethlehem | | | Allentown | | | Total | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Boys | Girls | Total | Boys | Girls | Total | Boys | Girls | |
| 4 | 31 | 34 | 65 | 51 | 40 | 91 | 82 | 74 | 156 |
| 5 | 30 | 20 | 50 | 49 | 34 | 83 | 79 | 54 | 133 |
| 6 | 29 | 29 | 58 | 45 | 46 | 91 | 74 | 75 | 159 |

## TABLE 2

## DISTRIBUTION OF COMPOSITIONS SELECTED FOR ANALYSIS ACCORDING TO ENUMERATION, GRADE, AND SEX

| Enumeration | Grade | Sex |
|---|---|---|
| 1 - 50 | 4 | F |
| 51 - 100 | 4 | M |
| 101 - 150 | 5 | F |
| 151 - 200 | 5 | M |
| 201 - 250 | 6 | F |
| 251 - 300 | 6 | M |

of zero. This decision by the investigator was made to most nearly reflect the types of scores which might be recorded if a random sample of the entire population of intermediate grade children had been used. Tables in Appendix B show the change which occurred in the statistical results when two legible compositions were later substituted for the compositions not analyzed.

## Analysis of Compositions

Each composition was carefully read. The first phase of analysis required the division of the children's sentences into workable thought units. Necessary punctuation was supplied when run-on sentences became too unwieldy. Wherever possible, the child's punctuation was honored. Both the independent and dependent clauses were identified in each sentence. The independent clauses were underlined with red pencil while the dependent were underscored with a blue pencil.

The structural patterns in the clauses were then identified according to the system developed by Roberts (1956), who stated that "Nearly all the complicated structures that make up our English sentences can be seen as variations of a very few basic patterns." (p. 296). These structures, though complex and varied, are limited to five basic patterns according to Roberts.

The simplest pattern is the noun-verb (NV) clause. While this pattern can be expanded into much longer constructions it remains basically the same pattern. For example:

Boys run.
Boys run swiftly.
The boys run swiftly.
The boys run very swiftly.
The tall boys run very swiftly.
The tall boys are running very swiftly.
The tall boys are still running very swiftly.
The tall boys with blue shorts are still running very swiftly.

Any of the other basic patterns can be expanded in similar ways. (Appendix C)

The second structural pattern is the noun-verb-noun (NVN) construction; that is, a subject or doer of the action, the verb which is the action, and a noun used as the object or receiver of the action.

A third pattern consists of a noun and verb followed by an adjective (NV(linking)Adj.). The verb in this pattern is considered a linking verb which links the adjective to the subject preceding it.

The fourth pattern which utilizes a linking verb connects two nouns which refer to the same person or thing. This is classified as the noun-verb (linking)-noun (NV(linking)N) structural pattern.

The most complex pattern is the noun-verb-noun-noun (NVNN) structure which designates a subject and verb followed by two nouns referring to different persons or things.

In cases where a clause contained a single subject and multiple verbs, three classifications could sometimes be applied: noun-verb, noun-verb-noun, noun-verb-noun-noun. In these instances the most complex expanded pattern was recorded.

Sentences were examined also for inverted statements and inverted questions. An inverted statement consists of a declarative sentence in which the verb precedes the subject while an inverted question consists of an interrogative sentence in which the subject precedes the verb. Both of these are reversals of the standard pattern.

Sentences which were classified as inverted statements or inverted questions were tallied and the frequency of occurrence was recorded. All other clauses in the compositions analyzed were classified under one of the five basic patterns of Roberts and the frequency of occurrence was recorded for each composition. A summary of the criteria used for this analysis is shown in Table 3.

The second phase of analysis was dependent upon the frequency with which various sentence modifiers occurred. A twenty per cent systematic random sample of all the sentences was provided for this analysis.

The second sentence of the first composition was selected in each category as the initial sampling point. This second sentence and every fifth sentence thereafter in the category were designated as sample sentences and underlined with a green pencil.

The sample sentences were classified in terms of four types of sentence modifiers which in this study have been designated as layers of modification. Roberts (1946, p. 240), considers a sentence modifier as, "...a structure that works as a unit against a main sentence pattern". In other words the main sentence pattern is modified and thus limited by a word or group of words classified as sentence modifiers.

In this study the first layer sentence modifications

## TABLE 3

## CRITERIA USED IN ANALYSIS OF STRUCTURAL PATTERNS

| Variable | Symbol | Example |
|---|---|---|
| *Noun-Verb | NV | Boys run. |
| *Noun-Verb-Noun | NVN | Dogs eat meat. |
| *Noun-Verb(linking) Adjective | NV(linking)Adj. | Girls are pretty. |
| *Noun-Verb(linking)Noun | NV(linking)Noun | Soldiers are men. |
| *Noun-Verb-Noun-Noun | NVNN | I showed mother my dress. |
| Inverted Statement (declarative sentence) |  | A boy am I. |
| Inverted Question (interrogative sentence) |  | The dog is where? |

*Taken from Roberts (1956).

are verb clusters which are introduced by an infinitive, a participle, or a gerund. The second layer sentence modifications are subordinate clauses with the subordinator being one of two types: because or who. The third layer sentence modifications consist of prepositional phrases while the fourth layer sentence modifications are adverbs. These layers of modification together with an example of each are shown in Table 4.

## Treatment of Data

Upon completion of the composition analysis, the frequency with which each of the variables occurred in each composition was tabulated and recorded on analysis sheets for transferral to data cards that were processed at the Lehigh University Computing Laboratory, Bethlehem, Pennsylvania, which contains a General Electric 225 Computer. A complete print-out of this data, which was checked against the original tabulation sheets, is presented in Appendix D.

The data were subjected to a multiple linear regression program which produced an inter-correlation matrix for each of the independent and dependent variables.

## TABLE 4

## CRITERIA USED IN ANALYSIS OF LAYERS OF MODIFICATION

| Variable | Nature of Variable | Example |
|---|---|---|
| First layer sentence modification | Verb clusters, infinitives, participles, gerunds | Running at top speed, Sam won the race. |
| Second layer sentence modification | Subordinate clauses:<br>because<br>who | Because he was angry, Tom smashed the lamp.<br>Mark, who was hungry, devoured two apples. |
| Third Layer sentence modification | Prepositional phrases | With the clever use of his mind and hands, Tom extinquished the fire. |
| Fourth layer sentence modification | Adverbs | Unfortunately, we had no money |

The same data cards were rearranged into groups of 25 each according to sex, age, and grade calssifications. (Table 5) This 2(Sex) X 2(Age) X 3(Grade) factorial design was subjected to an analysis of variance program that yielded the sum of squares and the mean squares for each main effect in terms of each of the independent criteria. Information concerning three first-order interactions, Sex X Age, Sex X Grade, Age X Grade, and one second-order interaction of Sex X Age X Grade was also provided through analysis of variance.

The F-ratios (Edwards, 1964, p. 321) were then computed. Differences which were at the .05 level of confidence or better were considered statistically significant. The main effect, Grade, when found to be significant was subjected to Tukey's Procedure for Comparing Individual Means. (Edwards, 1964, pp. 330-334)

The 12 separate analyses of variance, one for each of the independent criteria established in the composition analyses, are presented in tables in Chapter III.

## TABLE 5

## FACTORIAL DESIGN FOR ANALYSIS OF VARIANCE

| Grade | Boys | | | Girls | | | Total Group | | |
|---|---|---|---|---|---|---|---|---|---|
| | Younger | Older | Total | Younger | Older | Total | Boys | Girls | Total |
| 4 | 25 | 25 | 50 | 25 | 25 | 50 | 50 | 50 | 100 |
| 5 | 25 | 25 | 50 | 25 | 25 | 50 | 50 | 50 | 100 |
| 6 | 25 | 25 | 50 | 25 | 25 | 50 | 50 | 50 | 100 |

# CHAPTER III

# RESULTS OF STATISTICAL ANALYSES

The statistical results which are presented in this chapter are based upon the analyses of the written composition of three hundred children in grades four, five, and six in the city schools of Allentown, Pennsylvania, and Bethlehem, Pennsylvania. The data in this study were subjected to a multiple-linear regression program and an analysis of variance. The following results were obtained.

## Correlation of Variables

The correlational matrix for all variables which results from the multiple-linear regression program has been reproduced in Table 6. The values of the correlation coefficient for the five per cent and one per cent levels of significance corresponding to three hundred degrees of freedom are given below the table. Since the significance of the correlations in this table can be interpreted in terms of the degrees of freedom printed below the table, a comprehensive report on this matrix will not be included here.

## TABLE 6

## CORRELATIONAL MATRIX OF ALL VARIABLES

| Criterion | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Grade |  | 000 | 000 | 158 | 148 | 150 | 112 | 141 |
| 2. Sex | 000 |  | 000 | -169 | -152 | -258 | -140 | -118 |
| 3. Age | 000 | 000 |  | -093 | -106 | -012 | -086 | -060 |
| 4. Total number sentences | 158 | -169 | -093 |  | 903 | 758 | 787 | 478 |
| 5. Total number sample sentences | 148 | -152 | -106 | 903 |  | 683 | 732 | 463 |
| 6. Total number N.V. structures | 150 | -258 | -012 | 758 | 683 |  | 503 | 353 |
| 7. Total number N.V.N. structures | 112 | -140 | -086 | 787 | 732 | 503 |  | 314 |
| 8. Total number N.V. (linking) Adj. structures | 141 | -118 | -060 | 478 | 463 | 353 | 314 |  |
| 9. Total number N.V. (linking) N. structures | 191 | -047 | 170 | 161 | 120 | 145 | 133 | 110 |
| 10. Total number N.V.N.N. structures | -019 | 004 | 019 | 189 | 165 | 178 | -003 | -139 |
| 11. Total number inverted statements | 057 | -116 | 014 | 269 | 252 | 139 | 172 | 144 |
| 12. Total number inverted questions | 000 | 000 | 000 | 000 | 000 | 000 | 000 | 000 |
| 13. Total number first layer modifications in sample sentences | 080 | 066 | 022 | 103 | 115 | 036 | 080 | 004 |
| 14. Total number second layer modifications in sample sentences | 103 | -069 | 079 | 029 | 163 | 126 | 142 | 184 |
| 15. Total number third layer modifications in sample sentences | 065 | -018 | 018 | 148 | 158 | 076 | 191 | 105 |
| 16. Total number fourth layer modifications in sample sentences | 144 | 059 | -020 | 228 | 188 | 104 | 244 | 161 |

| N = 300 | Levels of Significance | 5% | 1% | Note: Decimals of correlation |
|---|---|---|---|---|
| df = 298 | (df = 300) | .113 | .148 | coefficients have been omitted |

TABLE 6 (continued)

| Criterion | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| 1. Grade | 191 | -019 | 057 | 000 | 080 | 103 | 065 | 144 |
| 2. Sex | -047 | 004 | -116 | 000 | 066 | -069 | -018 | 059 |
| 3. Age | 170 | 019 | 014 | 000 | 022 | 079 | 018 | -020 |
| 4. Total number sentences | 161 | 189 | 269 | 000 | 103 | 029 | 148 | 228 |
| 5. Total number sample sentences | 120 | 165 | 252 | 000 | 115 | 163 | 158 | 188 |
| 6. Total number N.V. structures | 145 | 178 | 139 | 000 | 036 | 126 | 076 | 104 |
| 7. Total number N.V.N. structures | 133 | -003 | 172 | 000 | 080 | 142 | 191 | 244 |
| 8. Total number N.V. (linking) Adj. structures | 110 | -139 | 144 | 000 | 004 | 184 | 105 | 161 |
| 9. Total number N.V. (linking) N. structures |  | -044 | 104 | 000 | -010 | 112 | 092 | -010 |
| 10. Total number N.V.N.N. structures | -044 |  | 063 | 000 | -084 | -041 | 068 | 080 |
| 11. Total number inverted statements | 104 | 063 |  | 000 | -077 | 118 | 014 | 033 |
| 12. Total number inverted questions | 000 | 000 | 000 |  | 000 | 000 | 000 | 000 |
| 13. Total number first layer modifications in sample sentences | -010 | -084 | -077 | 000 |  | -030 | -056 | -050 |
| 14. Total number second layer modifications in sample sentences | 112 | -041 | 118 | 000 | -030 |  | -037 | -042 |
| 15. Total number third layer modifications in sample sentences | 092 | 068 | 014 | 000 | -056 | -037 |  | 070 |
| 16. Total number fourth layer modifications in sample sentences | -010 | 080 | 033 | 000 | -050 | -042 | 070 |  |

| | | | | |
|---|---|---|---|---|
| N = 300 | Levels of Significance | 5% | 1% | Note: Decimals of correlation |
| df = 298 | (df = 300) | .113 | .148 | coefficients have been omitted |

## Analysis of Structural Patterns

The frequency of structural patterns by Sex, Age and Grade are presented in Tables 7 and 8. A consistant format will be followed in presenting the results of the analysis of these patterns. Information concerning each pattern will be presented in the following order:

1. Statement of the results
2. Table of the analysis of variance.
3. Table of means for the structural pattern.
4. Graphic presentation of the interactions which are statistically significant.

### Noun-Verb Pattern

The analysis of variance for the total number of Noun-Verb patterns (Table 9) shows a significant difference in terms of Sex and Grade. No first or second order interactions were found to be significant. A test for the comparison of individual means for the grade level reveals that the significance was in the following order of magnitude: grades four, five, and six. This significance is a factor of each grade increment. The main effect, Sex, is significant beyond the one per cent level. This is clearly

## TABLE 7

## FREQUENCIES, MEANS, AND STANDARD DEVIATIONS CRITERION VARIABLES BY GRADES

| | 4th Grade* | 5th Grade* | 6th Grade* | Total Group | | |
|---|---|---|---|---|---|---|
| | | | | Total | Mean | S. D. |
| Total number of sentences | 566 | 666 | 715 | 1947 | 6.49 | 3.96 |
| Total number sample sentences | 113 | 134 | 143 | 390 | 1.30 | .85 |
| Total number N.V. structures | 354 | 436 | 473 | 1263 | 4.21 | 3.36 |
| Total number N.V.N. structures | 546 | 564 | 632 | 1742 | 5.80 | 3.40 |
| Total number N.V. (linking) Adj. structures | 56 | 95 | 96 | 247 | .83 | 1.15 |
| Total number N.V. (linking) N. structures | 37 | 38 | 70 | 145 | .48 | .70 |
| Total number N.V.N.N. structures | 61 | 63 | 57 | 181 | .60 | .87 |
| Total number inverted statements | 26 | 31 | 36 | 93 | .31 | .72 |
| Total number inverted questions | 0 | 0 | 0 | 0 | 0 | 0 |
| Total number first layer modifications in sample sentences | 5 | 8 | 11 | 24 | .08 | .30 |
| Total number second layer modifications in sample sentences | 46 | 39 | 61 | 146 | .48 | .68 |
| Total number third layer modifications in sample sentences | 3 | 2 | 6 | 11 | .36 | .19 |
| Total number fourth layer modifications in sample sentences | 0 | 3 | 6 | 9 | .03 | .17 |

*The mean for each grade can be calculated by dividing the total of that grade by 100.

## TABLE 8

## FREQUENCY OF STRUCTURAL PATTERNS BY SEX, AGE, AND GRADE

| Structural Patterns | MALE | | | FEMALE | | |
|---|---|---|---|---|---|---|
| | Y* | O* | Total | Y* | O* | Total |
| Fourth Grade | | | | | | |
| NV structures | 76 | 69 | 145 | 108 | 101 | 209 |
| NVN structures | 134 | 119 | 253 | 160 | 133 | 293 |
| NV (linking) Adj. | 13 | 9 | 22 | 24 | 10 | 34 |
| NV (linking) N. | 9 | 11 | 20 | 7 | 10 | 17 |
| NVNN structures | 18 | 15 | 33 | 12 | 16 | 28 |
| Inverted statements | 4 | 6 | 10 | 7 | 9 | 16 |
| Inverted questions | 0 | 0 | 0 | 0 | 0 | 0 |
| Total patterns | 254 | 299 | 483 | 318 | 279 | 597 |
| Fifth Grade | | | | | | |
| NV structures | 89 | 57 | 146 | 128 | 162 | 290 |
| NVN structures | 141 | 78 | 219 | 163 | 182 | 345 |
| NV (linking) Adj. | 19 | 11 | 30 | 32 | 33 | 65 |
| NV (linking) N. | 4 | 6 | 10 | 9 | 19 | 28 |
| NVNN structures | 14 | 11 | 25 | 18 | 20 | 38 |
| Inverted statements | 7 | 0 | 7 | 10 | 14 | 24 |
| Inverted questions | 0 | 0 | 0 | 0 | 0 | 0 |
| Total patterns | 274 | 163 | 437 | 360 | 430 | 790 |
| Sixth Grade | | | | | | |
| NV structures | 115 | 92 | 207 | 125 | 141 | 266 |
| NVN structures | 169 | 152 | 321 | 155 | 156 | 311 |
| NV (linking) Adj. | 23 | 27 | 50 | 24 | 22 | 46 |
| NV (linking) N. | 15 | 22 | 37 | 11 | 22 | 33 |
| NVNN structures | 19 | 14 | 33 | 7 | 17 | 24 |
| Inverted statements | 11 | 6 | 17 | 6 | 13 | 19 |
| Inverted questions | 0 | 0 | 0 | 0 | 0 | 0 |
| Total patterns | 352 | 313 | 665 | 328 | 371 | 699 |

*Y = Younger *O = Older

indicated by the frequency with which girls used the Noun-Verb structure as compared with the frequency of use by the boys. The mean number of Noun-Verb structures was consistently higher in each grade in terms of sex. (Table 10)

Noun-Verb-Noun Pattern

The analysis of variance for the total number of Noun-Verb-Noun patterns (Table 11) shows a significant difference in terms of the main effect, Sex, and for the first order interaction, Sex X Grade. The frequency with which girls used the Noun-Verb-Noun patterns is significantly greater than the frequency with which boys used this pattern.

Table 12 indicates that the younger group for all grades wrote more Noun-Verb-Noun structures than the older group even though this difference was not significant. It is interesting to note that the means for grades four and five are the same but the mean for grade six is higher.

The significant interaction of Sex X Grade is graphically presented in Figure 1 which shows that a high degree of parallelity exists between the sexes from grades four to five for the girls and grades five to six for the boys. The plots show that the means for the boys and girls begin close to each other and then move in opposite directions. The

## TABLE 9

## ANALYSIS OF VARIANCE FOR NOUN-VERB PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 237.63 | 237.63 | 22.88 | .01 |
| Age | 1 | 1.20 | 1.20 | | |
| Grade | 2 | 74.18 | 37.09 | 3.57 | .05 |
| Sex X Age | 1 | 36.75 | 36.75 | 3.54 | N.S. |
| Sex X Grade | 2 | 45.50 | 22.75 | 2.19 | N.S. |
| Age X Grade | 2 | 1.29 | 0.64 | | |
| Sex X Age X Grade | 2 | 22.01 | 11.01 | 1.06 | N.S. |
| Within Cells | 288 | 2991.20 | 10.39 | | |
| Total | 299 | 3409.77 | | | |

Tukey's Procedure for Comparing Individual Means

Significant Gap = 0.09

Order of Magnitude

| Grade | 4 | 5 | 6 |
|---|---|---|---|
| Mean | 3.54 | 4.36 | 4.73 |

Significant Main Effect Means

| Sex | M | F |
|---|---|---|
| Mean | 3.32 | 5.10 |

## TABLE 10

## MEANS FOR TOTAL NUMBER OF NOUN-VERB PATTERNS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 3.04 | 2.76 | 4.32 | 4.04 | 2.90 | 4.18 | 3.54 |
| 5 | 3.56 | 2.28 | 5.12 | 6.48 | 2.92 | 5.80 | 4.36 |
| 6 | 4.60 | 3.68 | 5.00 | 5.64 | 4.14 | 5.32 | 4.73 |
| Total Group | 3.73 | 2.91 | 4.81 | 5.39 | 3.32 | 5.10 | 4.21 |

## TABLE 11

## ANALYSIS OF VARIANCE FOR NOUN-VERB-NOUN PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 81.12 | 81.12 | 7.32 | .01 |
| Age | 1 | 34.68 | 34.68 | 3.13 | N.S. |
| Grade | 2 | 41.15 | 20.57 | 1.86 | N.S. |
| Sex X Age | 1 | 25.81 | 25.81 | 2.33 | N.S. |
| Sex X Grade | 2 | 94.64 | 47.32 | 4.27 | .05 |
| Age X Grade | 2 | 4.88 | 2.44 | | |
| Sex X Age X Grade | 2 | 46.11 | 23.05 | 2.08 | N.S. |
| Within Cells | 288 | 3190.40 | 11.08 | | |
| Total | 299 | 3518.79 | | | |

Significant Main Effect Means

| Sex | M | F |
|---|---|---|
| Mean | 5.29 | 6.33 |

## TABLE 12

## MEANS FOR TOTAL NUMBER OF NOUN-VERB-NOUN PATTERNS

| Grade | Male |  | Female |  | Total |  | Total |
|---|---|---|---|---|---|---|---|
|  | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 5.36 | 4.76 | 6.40 | 5.32 | 5.06 | 5.86 | 5.46 |
| 5 | 5.64 | 3.12 | 6.52 | 7.28 | 4.38 | 6.90 | 5.46 |
| 6 | 6.76 | 6.08 | 6.20 | 6.24 | 6.43 | 6.22 | 6.32 |
| Total Group | 5.92 | 4.65 | 6.37 | 6.28 | 5.29 | 6.33 | 5.81 |

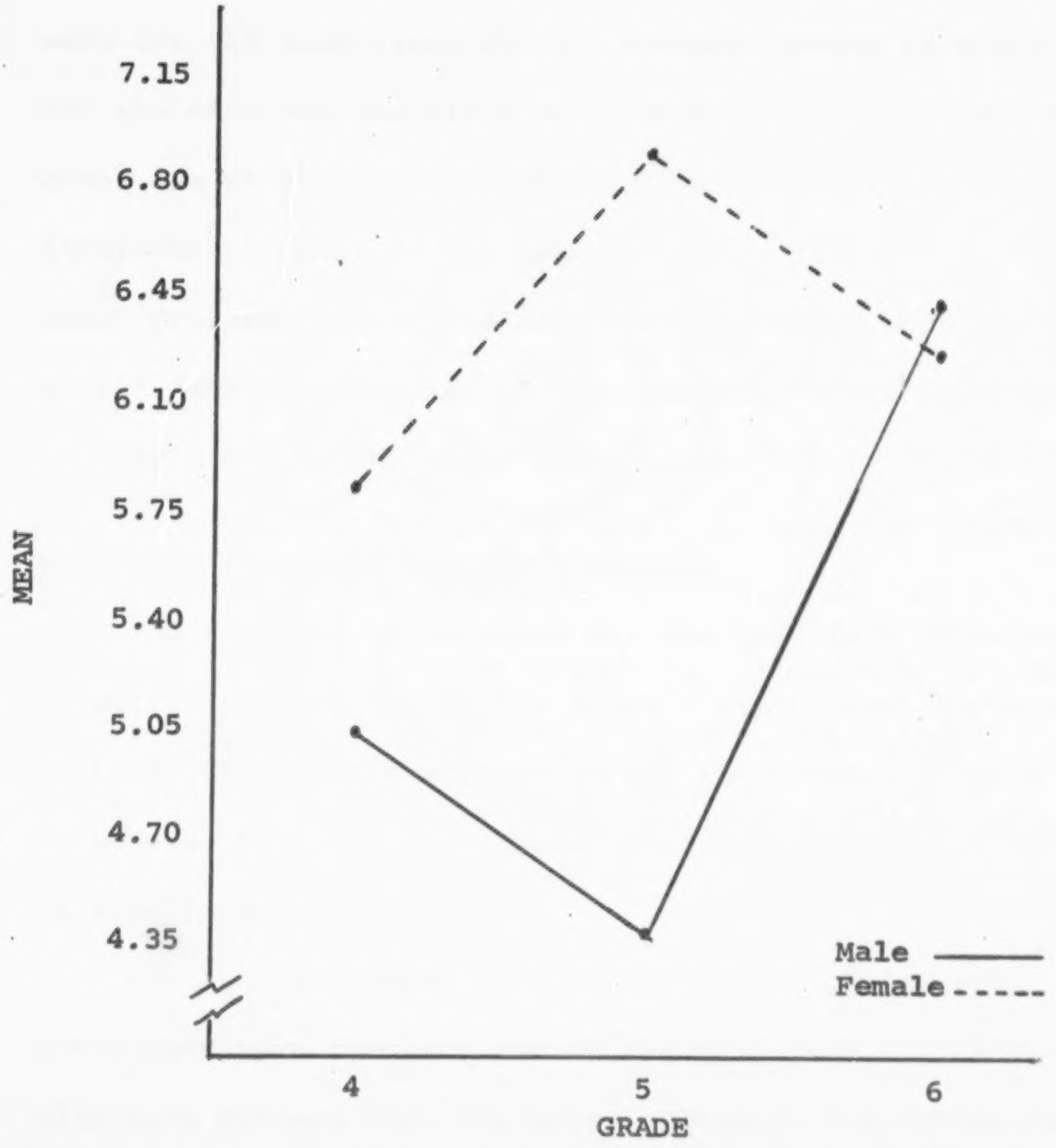

Figure 1 SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: NOUN-VERB-NOUN PATTERN)

mean for the boys rises sharply between grades five and six but the mean for the girls reveals that they make less frequent use of the Noun-Verb-Noun structure in grade six. An interaction occurs at the point of sharp increase in the boys' frequent use of the Noun-Verb-Noun structure and the girls' less frequent use of this pattern. This interaction is very close to the sixth grade level.

### Noun-Verb (linking)-Adjective Pattern

The analysis of variance for the Noun-Verb (linking)-Adjective pattern (Table 13) shows a significant difference in terms of the main effects of Sex and Grade. It will be noted also that the first order interaction of Sex X Grade is significant.

Figure 2 indicates that at the fourth grade level girls made more frequent use of the Noun-Verb (linking)-Adjective pattern than the boys. Although the incidence of the use of this pattern increased for the boys at grade five, a much greater increase of the use can be noted for the girls at the same grade level. The increase in the incidence of use continued as the boys progressed from grade five to grade six. However, a sharp decrease in the use of the Noun-Verb (linking)-Adjective pattern can be noted for the girls at the sixth grade level. At approximately the sixth grade level the interaction of the Grade and Sex occurs.

A test for the comparison of individual means for grade level reveals that the grade level significance is in this order of magnitude: grades four, five, and six and that this significance is a factor of the differences between grades four and five and grades four and six.

The analysis of variance reveals that girls made significantly greater use of the Noun-Verb(linking)-Adjective patterns than the boys.

The frequency with which the boys used the Noun-Verb (linking)-Adjective pattern increased as grade level increased. (Table 14) However, this statement does not apply to the girls. The fifth grade girls used the Noun-Verb (linking)-Adjective pattern more than did the girls in fourth or sixth grade.

### Noun-Verb (linking)-Noun Pattern

The analysis of variance for Noun-Verb (linking)-Noun patterns (Table 15) is significant in terms of Age and Grade.

# TABLE 13

## ANALYSIS OF VARIANCE FOR NOUN-VERB (linking)- ADJECTIVE PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 6.16 | 6.16 | 4.81 | .05 |
| Age | 1 | 1.76 | 1.76 | 1.38 | N.S. |
| Grade | 2 | 10.41 | 5.20 | 4.06 | .05 |
| Sex X Age | 1 | .16 | .16 | | |
| Sex X Grade | 2 | 7.69 | 3.84 | 3.00 | .05 |
| Age X Grade | 2 | 2.01 | 1.00 | | |
| Sex X Age X Grade | 2 | 2.01 | 1.00 | | |
| Within Cells | 288 | 369.44 | 1.28 | | |
| Total | 299 | 399.64 | | | |

Tukey's Procedure for Comparing Individual Means

Significant Gap = .32

Order of Magnitude

| Grade | 4 | 5 | 6 |
|---|---|---|---|
| Mean | .56 | .95 | .96 |

Significant Main Effect Means

| Sex | M | F |
|---|---|---|
| Mean | .67 | .97 |

# TABLE 14

## MEANS FOR TOTAL NUMBER OF NOUN-VERB (linking)-ADJECTIVE PATTERNS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.52 | 0.36 | 0.96 | 0.40 | 0.42 | 0.68 | 0.56 |
| 5 | 0.76 | 0.44 | 1.28 | 1.32 | 0.60 | 1.30 | 0.95 |
| 6 | 0.92 | 1,08 | 0.96 | 0.88 | 1.00 | 0.92 | 0.96 |
| Total Group | 0.73 | 0.63 | 1.07 | 0.87 | 0.67 | 0.97 | 0.82 |

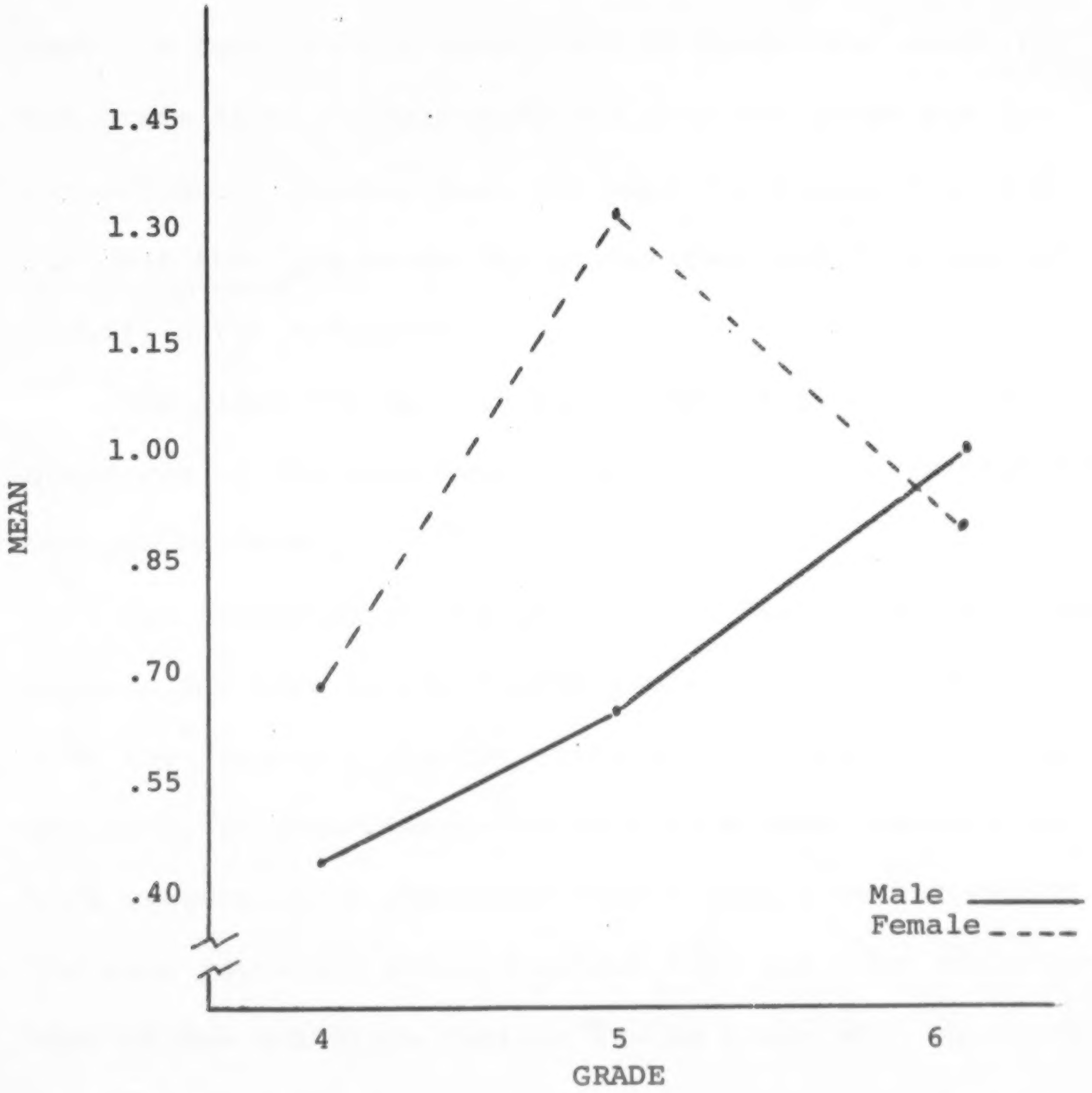

Figure 2 SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: NOUN-VERB (linking)- ADJECTIVE PATTERN)

The first order interaction, Sex X Grade, is also significant. A test for the comparison of individual means for the grade level reveals that the mean for grade six is significantly greater than the mean for grades four and five but that the means for grades four and five are not significantly different.

The older children at each grade level made more frequent use of the Noun-Verb (linking)-Noun pattern than the younger children.

The frequency of use of the Noun-Verb (linking)-Noun pattern for boys in the fourth grade (Figure 3) was greater than the frequency for the girls at the same grade level. On the fifth grade level the boys made less frequent use of this pattern while the girls made a more frequent use of the same pattern. Between grades four and five an interaction of Sex and Grade factors can be observed. An increase in the frequency of use of this pattern by the girls continued through the sixth grade. However, an extremely sharp increase in the use of this pattern for the boys resulted in a second point of interaction prior to the sixth grade level. A non-parallelity exists for both groups at all grade levels.

## TABLE 15

## ANALYSIS OF VARIANCE FOR NOUN-VERB (linking)-NOUN PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .40 | .40 | | |
| Age | 1 | 4.08 | 4.08 | 8.88 | .01 |
| Grade | 2 | 7.05 | 3.52 | 7.65 | .01 |
| Sex X Age | 1 | .56 | .56 | 1.22 | N.S. |
| Sex X Grade | 2 | 3.09 | 1.54 | 3.35 | .05 |
| Age X Grade | 2 | .85 | .42 | | |
| Sex X Age X Grade | 2 | .25 | .12 | | |
| Within Cells | 288 | 132.64 | .46 | | |
| Total | 299 | 148.92 | | | |

Tukey's Procedure for Comparing Individual Means

Significant Gap = .19

Order of Magnitude

| Grade | 4 | 5 | 6 |
|---|---|---|---|
| Mean | .37 | .38 | .70 |

Significant Main Effect Means

| Age | Y | O |
|---|---|---|
| Mean | .44 | .53 |

## TABLE 16

## MEANS FOR TOTAL NUMBER OF NOUN-VERB (linking)- NOUN PATTERNS

| Grade | Male |  | Female |  | Total |  | Total |
|---|---|---|---|---|---|---|---|
|  | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.36 | 0.44 | 0.28 | 0.40 | 0.80 | 0.68 | 0.37 |
| 5 | 0.16 | 0.24 | 0.36 | 0.76 | 0.40 | 1.12 | 0.38 |
| 6 | 0.60 | 0.88 | 0.44 | 0.88 | 1.48 | 1.32 | 0.70 |
| Total Group | 0.37 | 0.52 | 0.36 | 0.68 | 0.45 | 0.52 | 0.48 |

2

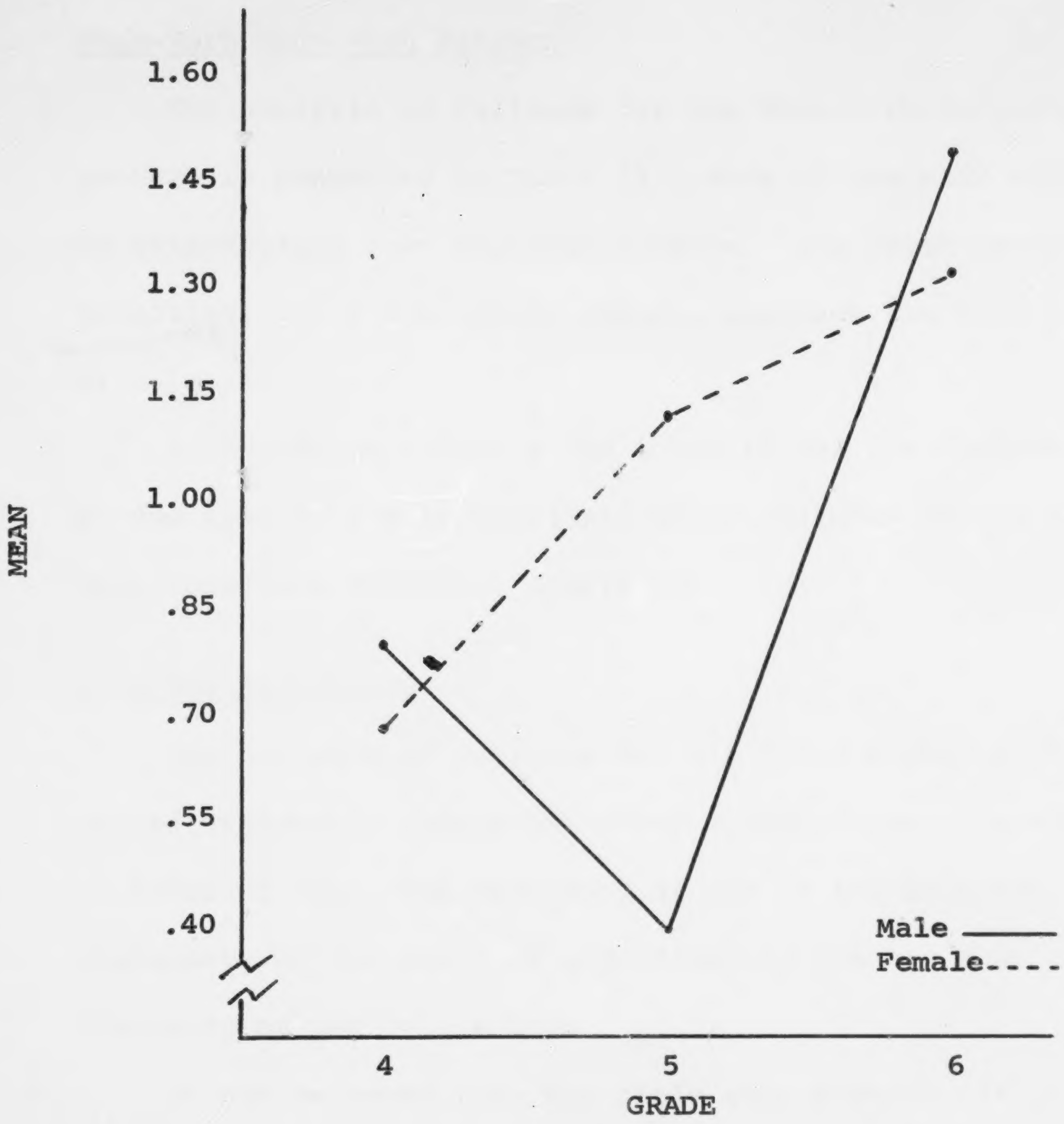

Figure 3 SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: NOUN-VERB (linking) NOUN PATTERN)

## Noun-Verb-Noun-Noun Pattern

The analysis of variance for the Noun-Verb-Noun-Noun pattern is presented in Table 17. None of the main effects or interactions show any significance. The first order interaction, Sex X Age, does, though, approach the five per cent level.

An important factor to be noted is the low incidence of use made by the intermediate grade children of the Noun-Verb-Noun-Noun pattern. (Table 18)

## Inverted Statements

The analysis of variance for the Total Number of Inverted Statements (Table 19) shows a significant difference in terms of Sex. The frequency of use of the inverted statements by the girls is significantly greater than the frequency of use by the boys.

It can be noted that the girls made greater use of this pattern at all grade levels than the boys. The largest mean for the boys was only slightly higher than the smallest mean for the girls although the incidence of use of the inverted statement was very low for all groups. (Table 20)

In the preceding reports of the analyses of structural

TABLE 17

ANALYSIS OF VARIANCE FOR
NOUN-VERB-NOUN-NOUN
PATTERN

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .00 | .00 | | |
| Age | 1 | .08 | .08 | | |
| Grade | 2 | .19 | .09 | | |
| Sex X Age | 1 | 2.43 | 2.43 | 3.12 | N.S. |
| Sex X Grade | 2 | 2.75 | 1.37 | 1.76 | N.S. |
| Age X Grade | 2 | .19 | .09 | | |
| Sex X Age X Grade | 2 | .56 | .28 | | |
| Within Cells | 288 | 223.60 | .78 | | |
| Total | 299 | 229.80 | | | |

## TABLE 18

## MEANS FOR TOTAL NUMBER OF NOUN-VERB-NOUN-NOUN PATTERNS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.72 | 0.60 | 0.48 | 0.64 | 0.66 | 0.56 | 0.61 |
| 5 | 0.56 | 0.44 | 0.72 | 0.80 | 0.50 | 0.76 | 0.63 |
| 6 | 0.76 | 0.56 | 0.28 | 0.68 | 0.66 | 0.48 | 0.57 |
| Total Group | 0.68 | 0.53 | 0.49 | 0.71 | 0.61 | 0.60 | 0.60 |

## TABLE 19

## ANALYSIS OF VARIANCE FOR INVERTED STATEMENTS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 2.08 | 2.08 | 4.08 | .05 |
| Age | 1 | .03 | .03 | | |
| Grade | 2 | .50 | .25 | | |
| Sex X Age | 1 | 1.76 | 1.76 | 3.45 | N.S. |
| Sex X Grade | 2 | 1.21 | .60 | 1.18 | N.S. |
| Age X Grade | 2 | .26 | .13 | | |
| Sex X Age X Grade | 2 | .89 | .44 | | |
| Within Cells | 288 | 147.44 | .51 | | |
| Total | 299 | 154.17 | | | |

Significant Main Effect Means

| Sex | M | F |
|---|---|---|
| Mean | .23 | .39 |

## TABLE 20

## MEANS FOR TOTAL NUMBER OF INVERTED STATEMENTS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.16 | 0.24 | 0.28 | 0.36 | 0.20 | 0.32 | 0.26 |
| 5 | 0.28 | 0.00 | 0.40 | 0.56 | 0.14 | 0.48 | 0.31 |
| 6 | 0.44 | 0.24 | 0.24 | 0.52 | 0.34 | 0.38 | 0.36 |
| Total Group | 0.29 | 0.16 | 0.31 | 0.48 | 0.23 | 0.39 | 0.31 |

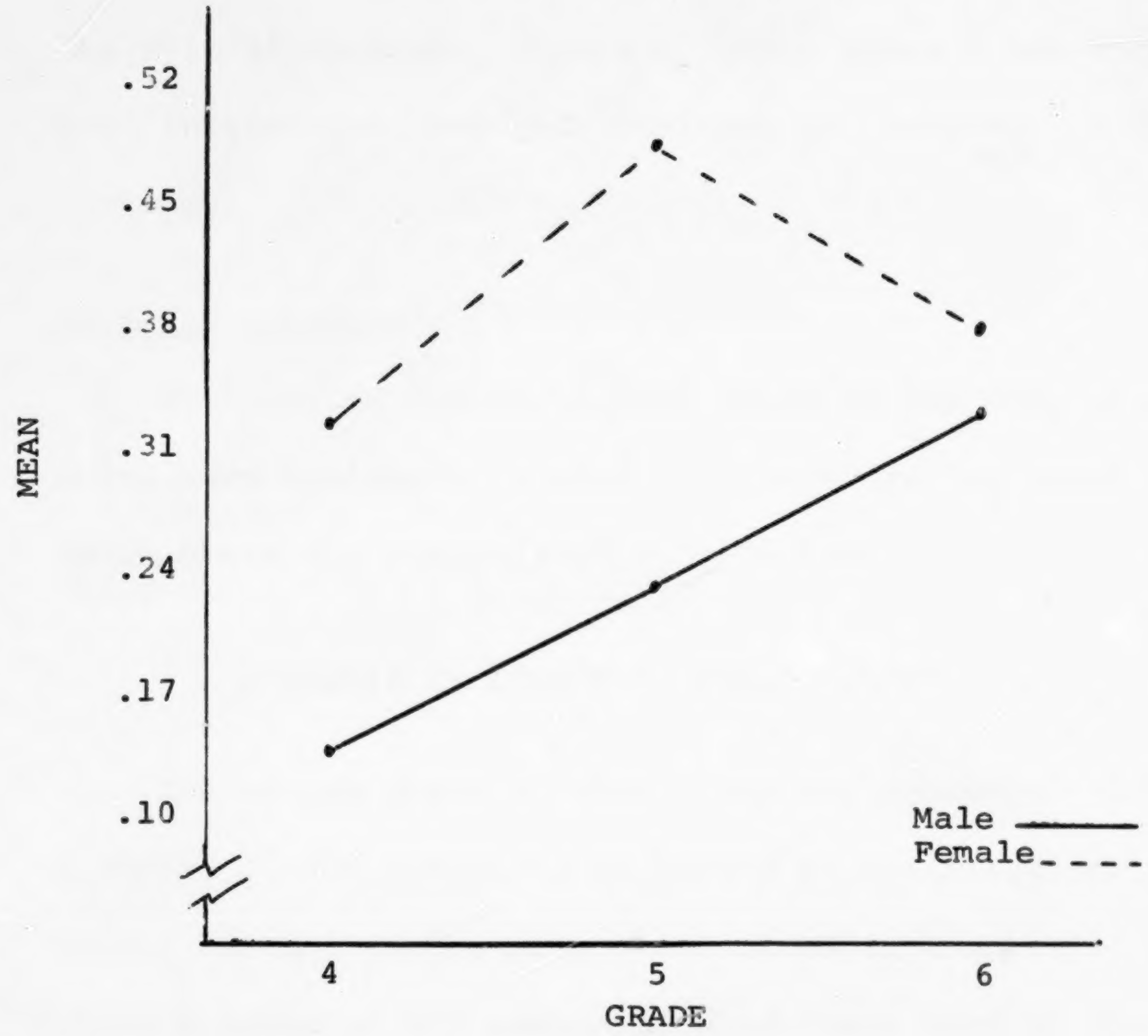

Figure 4 NON-SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: INVERTED STATEMENT PATTERN)

patterns figures showing the non-significant interactions have not been included. For the benefit of the reader who is not familiar with the meaning of the interaction in analysis of variance, Figure 4, which shows a non-significant interaction, has been included for purposes of comparison.

### Inverted Question

No inverted questions were found in the composition which were analyzed. (Table 7) Therefore, no results can be reported for analysis of this pattern.

## Analysis of Layers of Modification

The second phase of this study was concerned with the analysis of the frequency of layers of modification. The twenty percent random sample described in Chapter II provided a total of 390 sentences which were used in the analysis.

The frequency with which children used these layers of modification is presented in Table 21.

The same format which was used in reporting the analyses of structural patterns will be used in reporting the analyses of the layers of modification.

## TABLE 21

## FREQUENCY OF LAYERS OF MODIFICATION BY SEX, AGE, AND GRADE

| Layers of Modification | MALE | | | FEMALE | | |
|---|---|---|---|---|---|---|
| | Y* | O* | Total | Y* | O* | Total |
| **Fourth Grade** | | | | | | |
| Total sentences | 135 | 120 | 255 | 176 | 135 | 311 |
| Sample sentences | 27 | 24 | 51 | 35 | 27 | 62 |
| First layer M. | 0 | 4 | 4 | 1 | 0 | 1 |
| Second layer M. | 11 | 9 | 20 | 13 | 13 | 26 |
| Third layer M. | 0 | 0 | 0 | 2 | 1 | 3 |
| Fourth layer M. | 0 | 0 | 0 | 0 | 0 | 0 |
| **Fifth Grade** | | | | | | |
| Total sentences | 157 | 89 | 246 | 208 | 212 | 420 |
| Sample sentences | 33 | 17 | 50 | 43 | 41 | 84 |
| First layer M. | 4 | 1 | 5 | 2 | 1 | 3 |
| Second layer M. | 8 | 7 | 15 | 6 | 18 | 24 |
| Third layer M. | 1 | 1 | 2 | 0 | 0 | 0 |
| Fourth layer M. | 0 | 0 | 0 | 3 | 0 | 3 |
| **Sixth Grade** | | | | | | |
| Total sentences | 197 | 168 | 365 | 163 | 187 | 350 |
| Sample sentences | 38 | 35 | 73 | 34 | 36 | 70 |
| First layer M. | 2 | 3 | 5 | 3 | 3 | 6 |
| Second layer M. | 12 | 18 | 30 | 16 | 15 | 31 |
| Third layer M. | 1 | 2 | 3 | 1 | 2 | 3 |
| Fourth layer M. | 2 | 4 | 6 | 0 | 0 | 0 |

*Y = Younger　　*O = Older

## First Layer Modifications

The first layer of modification consisted of phrases which contained verb clusters, infinitives, participles, and gerunds which modify the entire basic sentence structure. (Running at top speed, Sam won the race.)

Table 22 reports the analysis of variance for the first layer modifications. None of the main effects or interactions are significant. It can be seen that from examination of Table 23 that the means for all groups were very small, but that arithmetically there was a slight increase in the means from fourth grade to fifth grade and from fifth grade to sixth grade.

## Second Layer Modifications

The second layer of modification contained the subordinate clauses which were subdivided into two types, the because and who varieties. (Because he was angry, Tom smashed the lamp.) (Mark, who was hungry, devoured two apples.)

Table 24 reports the analysis of variance for the second layer modifications. Here, again, none of the main effects, first order or second order interactions are significant at the five per cent level.

## TABLE 22

## ANALYSIS OF VARIANCE FOR FIRST LAYER MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .05 | .05 | | |
| Age | 1 | .00 | .00 | | |
| Grade | 2 | .18 | .09 | 1.12 | N.S. |
| Sex X Age | 1 | .05 | .05 | | |
| Sex X Grade | 2 | .09 | .04 | | |
| Age X Grade | 2 | .26 | .13 | 1.62 | N.S. |
| Sex X Age X Grade | 2 | .25 | .12 | 1.50 | N.S. |
| Within Cells | 288 | 23.20 | .08 | | |
| Total | 299 | 24.08 | | | |

## TABLE 23

## MEANS FOR THE FIRST LAYER MODIFICATIONS

| Grade | Male | | Female | | Total | | Total Groups |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | |
| 4 | 0.00 | 0.16 | 0.04 | 0.00 | 0.08 | 0.02 | 0.05 |
| 5 | 0.16 | 0.04 | 0.08 | 0.04 | 0.10 | 0.06 | 0.08 |
| 6 | 0.08 | 0.12 | 0.12 | 0.12 | 0.10 | 0.12 | 0.11 |
| Total Group | 0.08 | 0.11 | 0.08 | 0.05 | 0.09 | 0.07 | 0.08 |

The means for the second layer modifications are reported in Table 25.

### Third Layer Modifications

The third layer modifications contained the prepositional phrases which modify the entire sentence. (With the clever use of his hands, Tom extinguished the fire.)

Table 26 reports the data for the analysis of variance for this third layer of modification. None of the main effects or interactions are significant.

The means for the third layer modifications are reported in Table 27.

### Fourth Layer Modifications

The fourth layer modifications contained adverbs which modify the complete sentence. (Unfortunately, we had no money.) The analysis of variance for the fourth layer modifications (Table 28) shows no significant differences for any of the main effects. It does, though, show a significant difference at the one per cent level for the first order interaction, Sex X Grade.

Table 29 shows that mean for the male group is arithmetically twice as large as that of the female group. It

## TABLE 24

## ANALYSIS OF VARIANCE FOR SECOND LAYER MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .85 | .85 | 1.93 | N.S. |
| Age | 1 | .65 | .65 | 1.48 | N.S. |
| Grade | 2 | 2.53 | 1.26 | 2.86 | N.S. |
| Sex X Age | 1 | .21 | .21 | | |
| Sex X Grade | 2 | .33 | .16 | | |
| Age X Grade | 2 | .85 | .42 | | |
| Sex X Age X Grade | 2 | 2.00 | 1.00 | 2.27 | N.S. |
| Within Cells | 288 | 127.52 | .44 | | |
| Total | 299 | 124.95 | | | |

## TABLE 25

## MEANS FOR THE SECOND LAYER MODIFICATIONS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.44 | 0.36 | 0.52 | 0.52 | 0.40 | 0.52 | 0.46 |
| 5 | 0.32 | 0.28 | 0.24 | 0.72 | 0.30 | 0.48 | 0.39 |
| 6 | 0.48 | 0.72 | 0.64 | 0.60 | 0.60 | 0.62 | 0.61 |
| Total Group | 0.41 | 0.45 | 0.47 | 0.61 | 0.43 | 0.54 | 0.49 |

TABLE 26

ANALYSIS OF VARIANCE FOR
THIRD LAYER
MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .00 | .00 | | |
| Age | 1 | .00 | .00 | | |
| Grade | 2 | .09 | .04 | 1.00 | N.S. |
| Sex X Age | 1 | .00 | .00 | | |
| Sex X Grade | 2 | .13 | .06 | 1.50 | N.S. |
| Age X Grade | 2 | .05 | .02 | | |
| Sex X Age X Grade | 2 | .00 | .00 | | |
| Within Cells | 288 | 10.32 | .04 | | |
| Total | 299 | 10.60 | | | |

## TABLE 27

## MEANS FOR THE THIRD LAYER MODIFICATIONS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.00 | 0.00 | 0.08 | 0.04 | 0.00 | 0.06 | 0.03 |
| 5 | 0.04 | 0.04 | 0.00 | 0.00 | 0.04 | 0.00 | 0.02 |
| 6 | 0.04 | 0.08 | 0.04 | 0.08 | 0.06 | 0.06 | 0.06 |
| Total Group | 0.03 | 0.04 | 0.04 | 0.04 | 0.03 | 0.04 | 0.04 |

## TABLE 28

## ANALYSIS OF VARIANCE FOR FOURTH LAYER MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .03 | .03 | 1.00 | N.S. |
| Age | 1 | .00 | .00 | | |
| Grade | 2 | .18 | .09 | 3.00 | N.S. |
| Sex X Age | 1 | .08 | .08 | 2.67 | N.S. |
| Sex X Grade | 2 | .42 | .21 | 7.00 | .01 |
| Age X Grade | 2 | .13 | .06 | 2.00 | N.S. |
| Sex X Age X Grade | 2 | .05 | .02 | | |
| Within Cells | 288 | 7.84 | .03 | | |
| Total | 299 | 8.73 | | | |

## TABLE 29

## MEANS FOR THE FOURTH LAYER MODIFICATIONS

| Grade | Male | | Female | | Total | | Total |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | Groups |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.06 | 0.03 |
| 6 | 0.08 | 0.16 | 0.00 | 0.00 | 0.12 | 0.00 | 0.06 |
| Total Group | 0.03 | 0.05 | 0.04 | 0.00 | 0.04 | 0.02 | 0.03 |

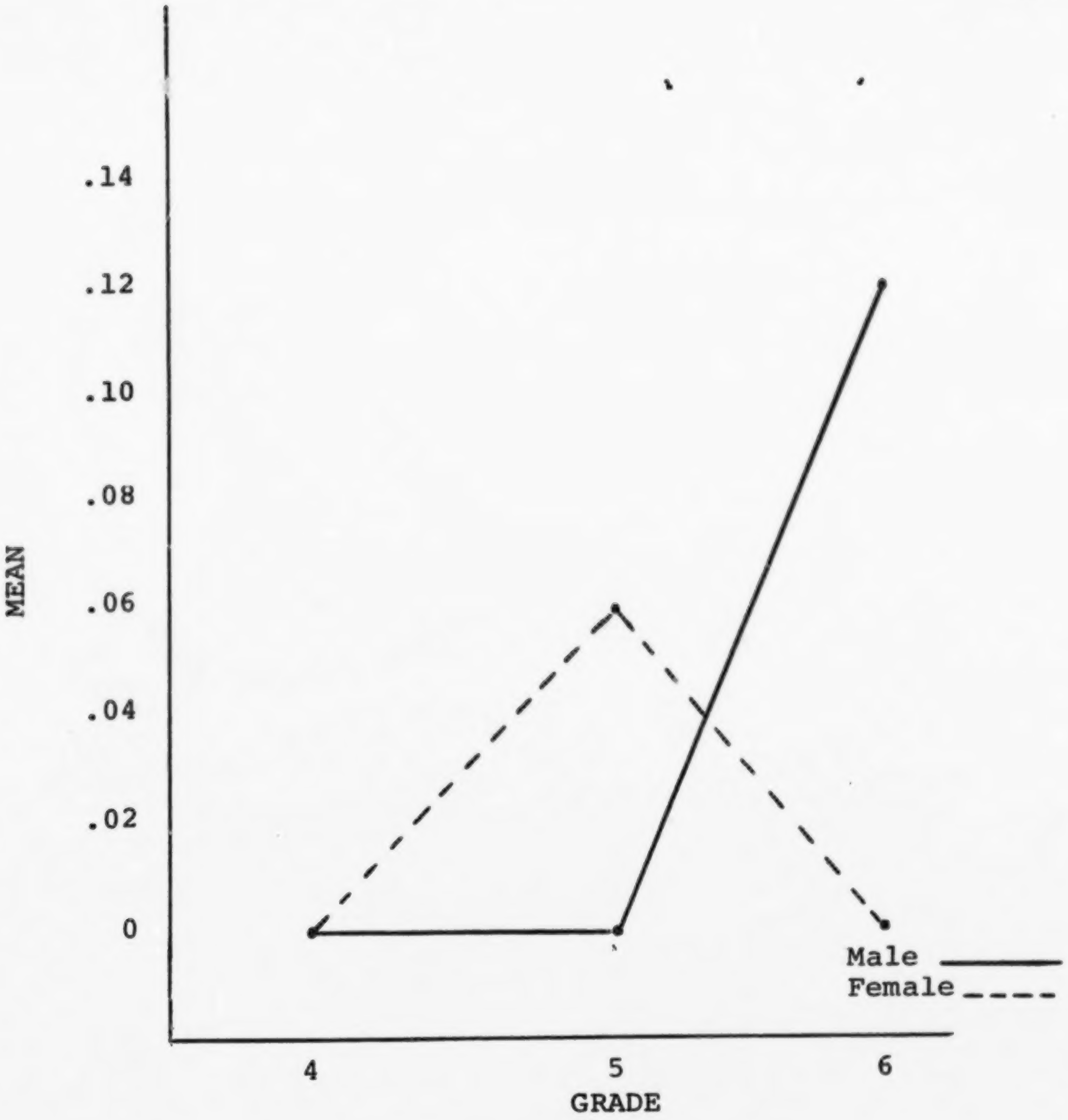

Figure 5 SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: FOURTH LAYER MODIFICATION)

also shows that the mean for grade six for all children is twice as large as the mean for grade five. It can also be seen that the mean for grade five is three times as large as the mean for grade four. Figure 5 graphically shows the relationship of these means for size.

## Analysis of Total Number of Sentences

In addition to the analysis of the structural patterns and the layers of modification, an analysis was made of the total number of sentences in the compositions which were analyzed. This analysis is reported with the same format as the preceding analyses.

The analysis of variance for the total number of sentences (Table 30) shows a significant difference in terms of main effects of Sex and Grade. The main effect, Age, is non-significant but approaches the five per cent level. A test for the comparison of the individual means for the grade level reveals that no significant difference can be found between grades four and five, and between grades five and six. However, the difference between grades four and six is significant. The girls as a group wrote a significantly greater number of sentences than the boys. However, when the differences between the number of sentences by girls and boys is considered by grade groups it is found, as shown in Table 31, that only the fourth grade and fifth grade girls wrote a greater number of sentences than did the boys at the same grades. In the sixth grade, though, the boys wrote more sentences than did the girls.

The group means show that the younger children wrote more sentences than the older children; however, this arithmetical difference was not found to be significant.

Figure 6 gives a graphic presentation of the interaction of Sex and Grade.

### TABLE 30

### ANALYSIS OF VARIANCE FOR TOTAL NUMBER SENTENCES

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 154.08 | 154.08 | 10.68 | .01 |
| Age | 1 | 52.08 | 52.08 | 3.61 | N.S. |
| Grade | 2 | 115.34 | 57.67 | 4.00 | .05 |
| Sex X Age | 1 | 32.67 | 32.67 | 2.26 | N.S. |
| Sex X Grade | 2 | 182.29 | 91.14 | 6.32 | .01 |
| Age X Grade | 2 | 20.49 | 10.24 | | |
| Sex X Age X Grade | 2 | 54.02 | 27.00 | 1.87 | N.S. |
| Within Cells | 288 | 4154.00 | 14.42 | | |
| Total | 299 | 4764.97 | | | |

Tukey's Procedure for Comparing Individual Means

Significant Gap = 1.06

Order of Magnitude

| Grade | 4 | 5 | 6 |
|---|---|---|---|
| Mean | 5.66 | 6.66 | 7.15 |

Significant Main Effect Means

| Sex | M | F |
|---|---|---|
| Mean | 5.77 | 7.21 |

## TABLE 31

## MEANS FOR THE TOTAL NUMBER OF SENTENCES

| Grade | Male | | Female | | Total | | Total Groups |
|---|---|---|---|---|---|---|---|
| | Younger | Older | Younger | Older | Male | Female | |
| 4 | 5.40 | 4.80 | 7.04 | 5.40 | 4.50 | 6.22 | 5.66 |
| 5 | 6.28 | 3.56 | 8.32 | 8.48 | 4.92 | 8.40 | 6.66 |
| 6 | 7.88 | 6.72 | 6.52 | 7.48 | 7.30 | 7.00 | 7.15 |
| Total Group | 6.52 | 5.03 | 7.29 | 7.12 | 5.77 | 7.21 | 6.49 |

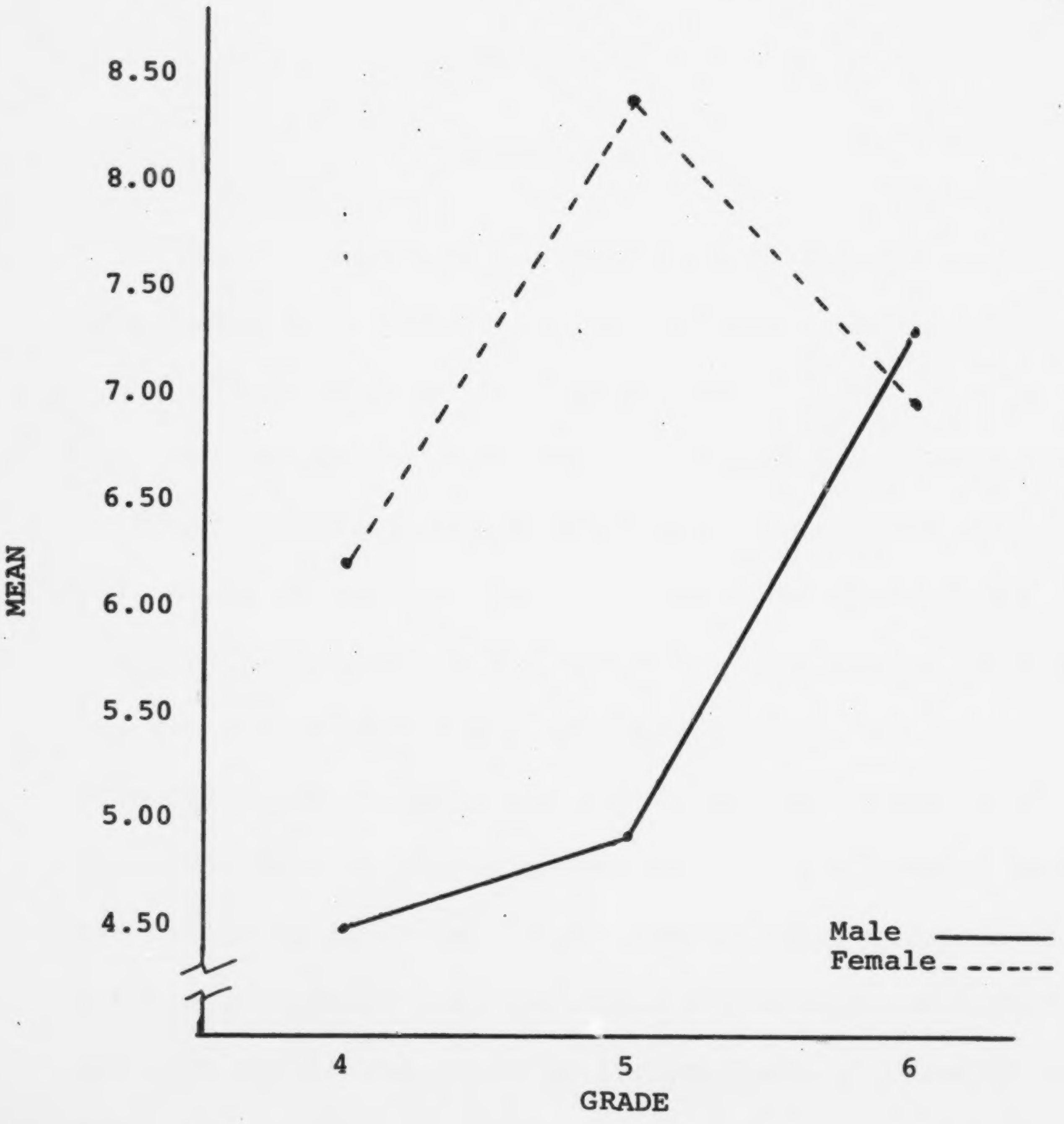

Figure 6 SIGNIFICANT INTERACTION OF SEX X GRADE (CRITERION VARIABLE: TOTAL NUMBER OF SENTENCES)

# CHAPTER IV

## DISCUSSION

The discussion of the results will attempt to provide the reader with insights concerning the interrelation of the findings reported in Chapter III.

The assumption that the proficiency of children varies in their written language development and that a fundamental method of analysis for studying these differences could be developed was the basis for this study. Sam (1962) had found that children's written language development was affected by grade level and sex while the residence of children had very little affect on it. The present study has continued to probe the written language development of intermediate grade children using criteria based upon the sentence structural patterns for analysis in terms of the effect of grade, age, and sex.

The correlations which were reported in the previous chapter show that several of the variables are highly related. The independent and dependent variables are both inter-related and intra-related. The correlations which are reported in Table 6 are further supported by the analyses of variance which form the major part of the findings reported in Chapter III. The negative correlations which occur between several of the variables shows that as certain of the variables increased in frequency the other variable conversely decreased. Further investigation may reveal why this phenomena occurs. More negative correlations appear when the variables of Sex and Age were correlated with the other variables.

The analysis of the compositions showed that all of the structural patterns appeared in all of the intermediate grades. This analysis also showed that the noun-verb-noun pattern was used more frequently than any of the other patterns. The noun-verb pattern described by Roberts (1956) as the simplest pattern, which was believed would appear most often, appeared as the second most frequently used pattern instead of the most frequently used pattern. In all of the strucutral patterns which were examined and found to be significant, most often Sex and Grade were the significant main effects. Although the most complex structural pattern, noun-verb-noun-noun, was found less frequently than the other patterns, it was used by children at all of the intermediate grade levels.

Examination of the lines plotted for the means when Grade was found to be signigicant in many of the variables shows that the pattern of growth for the boys from grades five to six parallels the pattern of growth for the girls between grades four and five. The pattern of growth for the boys between fourth and sixth grade appears to be less rapid than the pattern of growth for the girls, but this pattern of growth increases constantly thoughout the three grades. In contrast, the line for the girls appears to begin on a higher level, rises rapidly from grades four to five, but then declines or plateaus from grades five to six. This, therefore, brings the lines for the boys and girls in close proximity to each other on the sixth grade level. It would be interesting to see through further study what occurs to the growth lines as the children progress through the later grades.

In all of the structural patterns examined, except the noun-verb-noun-noun pattern, the girls, as a group, made more frequent use of the structural patterns than did the boys. Again, excepting the noun-verb-noun-noun pattern, the frequency with which each structural pattern was written increased as the grade level increased.

The motivational device used in this study tended to cause some children to react with a written conversational response. Therefore, more inverted statements may have been written than if a differently structured device had been utilized. Of the total of 438 children exposed to the motivational device, every child made an effort to write and submitted evidence of this effort.

The inverted question pattern did not appear in any of the compositions analyzed at any of the grade levels. Further study may reveal a reason for this occurrence.

For the layers of modification, as defined in this study, no significant differences can be found for the main effects of Sex, Age, and Grade although the interaction of Sex X Grade was found to be significant for the fourth layer modification. It was found that the fourth layer modification did not appear at all on the fourth grade level for either the boys or the girls. Some use of the pattern occurred on the fifth grade level for the girls but not at all for the boys. On the sixth grade level, however, the boys used the pattern which gave a rapid rise to the line plotted in Figure 6, while the girls did not use the pattern causing their plotted line to drop back to the zero point. The low incidence of use of the fourth layer modification coupled with the several zero scores causes the lines which are plotted in Figure 6 to be greatly exaggerated. This low incidence reveals that the criterion used to measure the layers of modification are not applicable to the analysis of compositions written by intermediate grade children.

As the compositions were read and analyzed, differences in the writing patterns of the children at the various grade levels became apparent. The composition length from grades four to five and grades five to six increased in terms of the total number of sentences written. The analysis of variance for the total number of sentences supports this observation.

## CHAPTER V

## CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This pilot study was initiated to determine the feasibility of identifying the basic structural patterns in compositions written by intermediate grade children; to establish evidence for determining growth gradients in written composition; and to develop indices of modification to reveal levels of maturity in their written language which might facilitate scholastic organization of language programs.

A cross-sectional approach was used to collect 438 compositions from two schools selected from the cities of Allentown, Pennsylvania, and Bethlehem, Pennsylvania. Three hundred compositions were randomly selected for analysis from the total number of compositions collected. This sample size, it was felt, was sufficient to determine if a more comprehensive sampling technique is warranted.

The data in this study were subjected to a multiple-linear regression program and analysis of variance. The following findings are a result of these two programs:

1. Of the one hundred, twenty co-efficients of

correlation obtained, fifty were found to be significant although only five were relatively high.

2. Several of the co-efficients were negative, indicating that the variables were inversely related.
3. Analysis of the structural patterns revealed that all of the patterns except the inverted question were present in the compositions that were analyzed.
4. The noun-verb-noun pattern was the most frequently used. The next most frequent pattern used was the noun-verb.
5. Sex appeared as the most frequent significant main effect. It was significant for four of the patterns as can be seen in Table 32. In each case the girls made more frequent use of the pattern than the boys.
6. Grade was found to be significant for three patterns while age was significant for only one.
7. In the first order interactions Sex X Grade was significant for two patterns.
8. Neither Age X Grade nor the second order interaction of Sex X Age X Grade were significant.

9. All of the layers of modification appeared in the compositions analyzed. However, they occur very infrequently with one exception, the second layer modification. This layer of modification was the one used most frequently by the total group as well as by each group.
10. None of the main effects, the first order, or second order interactions were significant for the layers of modification except the interaction of Sex X Grade for the fourth layer modification. (Table 32) Note should be made, however, that several groups made no use of this layer of modification.
11. The main effects of Sex and Grade as well as the first order interaction of Sex X Grade were significant for the total number of sentences written.
12. In all sub-groups except one, girls wrote more sentences than did boys. The younger sixth grade boys, though, wrote more sentences than the younger sixth grade girls.

Table 32 summarizes the criterion variables declared significant.

## TABLE 32

## CRITERION VARIABLES DECLARED SIGNIFICANT

| | Sex | Age | Grade | Sex X Age | Sex X Grade | Age X Grade | Sex X Age X Grade |
|---|---|---|---|---|---|---|---|
| Total number sentences | X | | X | | X | | |
| Total number sample sentences | | | | | | | |
| Noun-Verb patterns | X | | X | | | | |
| Noun-Verb-Noun patterns | X | | | | X | | |
| Noun-Verb (linking) Adj. patterns | X | | X | | X | | |
| Noun-Verb (linking) Noun patterns | | X | X | | | | |
| Noun-Verb-Noun-Noun patterns | | | | | | | |
| Inverted statements | X | | | | | | |
| Inverted questions | | | | | | | |
| First layer modifications | | | | | | | |
| Second layer modifications | | | | | | | |
| Third layer modifications | | | | | | | |
| Fourth layer modifications | | | | | X | | |

## Conclusions

In view of the findings and delimitations of this pilot study, the following conclusions are warranted:

1. That an analysis of the structural patterns used by intermediate grade children in written composition reveals that significant differences exist in the frequency with which they use these patterns in terms of sex and grade. Age appears to be less useful in determining the frequency with which the basic structural patterns are used.
2. Intermediate grade children make use of all of the basic sentence patterns with the exception of the inverted question pattern. The infrequent use of the inverted question may have been due to the limited number of compositions analyzed or to the nature of the written response required by the motivational device.
3. Children in the intermediate grades make greater use of the noun-verb-noun pattern than they do of the less complex noun-verb pattern.

4. The extent to which the patterns are used seem to be affected more by sex than by grade or age. Girls made significantly greater use of four patterns than did the boys.
5. The number of years children spend in school has a greater effect upon the use of the patterns than does chronological age. In only one pattern, noun-verb (linking)-noun, was the main effect, Age, found to be significant. However, grade is also a significant factor which affects the frequency of use of the noun-verb (linking)-noun pattern.
6. Children in the intermediate grades make little use of the layers of modification in their writing. This may be due to the limited number of sentences analyzed or it may be due to the level of written language development reached by the children of the intermediate grades.
7. Girls in the intermediate grades write more and make greater use of the more complex sentence patterns than do boys in the same grades.

## Implications for Education

1. Since the intermediate grade children use all the basic sentence structural patterns in writing, an individualized, non-graded program should be developed which would be based on the level of the child's written language development.
2. Teachers should become aware of the basic sentence structural patterns and provide opportunities for children to make use of the varying patterns.
3. Children should be provided with opportunities to analyze their written work in an attempt to make use of the basic sentence structural patterns.
4. Non-graded language resource materials should be developed which contain information concerning all of the basic sentence patterns and their function in written language expression.

## Recommendations for Further Study

1. The sample population used in this pilot study of written language development of intermediate grade children should be enlarged to include representation from all of the geographic areas of the United States.

2. The criteria used for the analysis of the compositions in this study should be expanded to incorporate selected criteria established by Sam (1963) and where feasible related to the criteria used by Loban (1961) and Strickland (1962) in their analyses of children's oral language development.
3. The expanded criteria which were suggested in Number 2 should be applied in a study of compositions written by children in the primary grades, the junior high school, and the senior high school.
4. The criteria which were used to examine the layers of modification should be altered. A set of criteria should be developed which might more readily reflect the degrees of modification and elaboration used by children in written composition.
5. A study which would attempt to reveal the relationship of the basic sentence structural patterns and the rhetorical aspects of written language should be made.

# APPENDICES

# APPENDIX A

## MOTIVATIONAL TECHNIQUE TO STIMULATE WRITTEN RESPONSE

Directions:

You have just received a sheet of paper. Please look at the top of the page. We shall fill in the information together.

Now look at the top where it says NAME. (Point to the proper place). Write your first and last names here. Do this as quickly as you can and write plainly. (Pause). Where it says GRADE, write your grade. (Point to the proper place). Where it says SCHOOL, write the name of your school. (Point to the proper place). Where it says CITY, write the name of the city. (Point to the proper place). Where it says BOY or GIRL, place a check mark behind the proper one. (Point to the proper place). Put your pencil down.

Listen carefully to what I tell you. You must do your best, but I do not expect all of you to get finished in the time allowed.

Listen carefully to the following short story and be prepared to write after the instructions at the end of the story are given.

Tom wearily wiped his brow with a damp sleeve as he watched Martha slowly moving the handle of the churn up and down. Who could believe this narrow valley would be so hot in spring and so bitterly cold in winter?

It was just a year ago this week that father decided to leave the comfortable stone and log homes of the Bethlehem settlement to follow the Lehigh River through the big gap to Lizard Creek.

"It certainly is a beautiful valley with dogwood, wild crab apples and hawthorn in bloom," thought Tom. "No wonder Dad has chosen this spot for his permanent home."

Water was plentiful from the seven springs on the floor of the valley, and a good supply of brown trout flashed in the nearby brook. Rabbits, wild turkey, pheasants and grouse provided more than enough meat for the table. Hunting indeed was fun!

Nevertheless this past year of 1761 had been a difficult one. First came the back-breaking task of digging into the winter side of the hill; then the careful walling of the opening with stones from the nearby fields which friends had helped them clear for their first harvest; finally the cutting and shaping of the heavy hickory and oak beams which were to form the supports for the upper portion of the house. Fall had advanced much too rapidly and with no other choice, a temporary roof had hastily been made of twigs and rushes so the family could move into their cellar home before the first snowfall.

Tom glanced critically at the stone-lined dugout with its thatched roof and huge chimney at one end. It certainly was not what their family had been used to, the dirt floor was always damp, and no matter how often Martha swept it with the broom Tom had fashioned for her, it was still plain dirt! Yet, when the walls had been white-washed with lime, and a large fire twinkled in the huge hearth, and the smell of fresh stew floated from the black iron kettle - it was home. The family was together, free to think as they chose and that's what really counted.

Tom's sister Martha, looking up from her churning task caught Tom's sidelong glance and shouted, "The butter's almost done, I'll race you to the spring."

Tom needed no second invitation to drop the heavy adz, an ancestor of our modern axe, that he was using to trim branches from the fallen oak, and run pell-mell to the crystal spring for a refreshing drink.

"There's nothing to quench a man's thirst like water," sighed Tom as he lifted a wet face from the spring.

"I don't know about that! - I rather thought the lemon drink at the store in Bethlehem was better," said Martha wistfully.

Tom noted the hint of homesickness in her voice and said kindly, "We both need rest. I"ll help you finish the chores. If you fold the blanket that's airing, I"ll fill the buckets and water the livestock for the evening. Then we can just sit and rest, or do whatever you'd like."

He was really being gallant, for he had worked hard all day to catch a few moments for himself to take down his grandfather's violin from its worn case and gently slide the horsehair bow across the strings to create a haunting melody. Perhaps in a few years when the family was really settled he could return to Bethlehem and learn fine music to play for great audiences, but until then---

Martha's voice pierced his thoughts sharply.

"Tom, the roof!"

A quick glance showed Tom the thing that Father had feared most was really happening. The temporary roof had caught a spark from the smoldering fireplace and had begun to smoke gently. As the red tongues of flame became visible, Tom's thoughts panicked through his mind. Father, who was forty miles away gathering supplies in Bethlehem, and Mother, who was a half mile over the fields visiting a sick neighbor, had left him completely in charge. What should he do? What could he do? If the fire fanned out farther, valuable labor as well as all their possessions would be lost. Worse, if the fire reached the cut logs and wood laying ready for assembling the upper floors of the house, it would spread rapidly to the dried grass beyond and not one thing in the valley would be safe.

(Short pause)

Tom had an adz, which is like our modern axe, a violin, and two wooden buckets. Martha had a broom, a butter churn and a blanket. Tell, by writing on the paper you have, what you would have done if you were Tom or Martha. If you want to use a word when writing which you cannot spell don't worry - spell it the best you can.

You will have 15 minutes to write. If you have not finished when the time is up, it will be all right. I am sure I will understand how you wished to complete the story.

You may take a few minutes to think before you begin to write.

If there are no questions, you may begin now.

(After 15 minutes have passed, say, "Stop, put your pencil down. Please pass your papers forward to me.")

# APPENDIX B

## ANALYSIS OF VARIANCE OF DATA WITH LEGIBLE COMPOSITIONS SUBSTITUTED FOR ZERO SCORES

## TABLE B-9

## ANALYSIS OF VARIANCE FOR NOUN -VERB PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 225.33 | 225.33 | 21.83 | .01 |
| Age | 1 | .48 | .48 | | |
| Grade | 2 | 79.33 | 39.66 | 3.84 | .05 |
| Sex X Age | 1 | 32.01 | 32.01 | 3.20 | N.S. |
| Sex X Grade | 2 | 44.69 | 22.34 | 2.16 | N.S. |
| Age X Grade | 2 | 1.82 | .91 | | |
| Sex X Age X Grade | 2 | 19.93 | 9.96 | .97 | N.S. |
| Within Cells | 288 | 2972.08 | 10.32 | | |
| Total | 299 | 3375.67 | | | |

# TABLE B-11

## ANALYSIS OF VARIANCE FOR NOUN-VERB-NOUN PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 67.21 | 67.21 | 6.13 | .05 |
| Age | 1 | 25.81 | 25.81 | 2.35 | N.S. |
| Grade | 2 | 46.32 | 23.16 | 2.11 | N.S. |
| Sex X Age | 1 | 18.25 | 18.25 | 1.66 | N.S. |
| Sex X Grade | 2 | 93.29 | 46.64 | 4.26 | .05 |
| Age X Grade | 2 | 6.33 | 3.16 | | |
| Sex X Age X Grade | 2 | 40.65 | 20.32 | 1.85 | N.S. |
| Within Cells | 288 | 3155.68 | 10.96 | | |
| Total | 299 | 3453.55 | | | |

# TABLE B-13

## ANALYSIS OF VARIANCE FOR NOUN-VERB (linking)-ADJECTIVE PATTERNS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 5.60 | 5.60 | 4.34 | .05 |
| Age | 1 | 1.47 | 1.47 | 1.14 | N.S. |
| Grade | 2 | 10.94 | 5.47 | 4.24 | .05 |
| Sex X Age | 1 | .27 | .27 | | |
| Sex X Grade | 2 | 6.89 | 3.44 | 2.67 | .05 |
| Age X Grade | 2 | 2.06 | 1.03 | | |
| Sex X Age X Grade | 2 | 1.58 | .79 | | |
| Within Cells | 288 | 371.52 | 1.29 | | |
| Total | 299 | 400.33 | | | |

## TABLE B-24

## ANALYSIS OF VARIANCE FOR SECOND LAYER MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .65 | .65 | 1.44 | N.S. |
| Age | 1 | .85 | .85 | 1.66 | N.S. |
| Grade | 2 | 3.05 | 1.52 | 3.38 | N.S. |
| Sex X Age | 1 | .12 | .12 | | |
| Sex X Grade | 2 | .53 | .26 | | |
| Age X Grade | 2 | .89 | .44 | | |
| Sex X Age X Grade | 2 | 2.42 | 1.21 | 2.69 | N.S. |
| Within Cells | 288 | 128.48 | .45 | | |
| Total | 299 | 136.99 | | | |

## TABLE B-26

## ANALYSIS OF VARIANCE FOR THIRD LAYER MODIFICATIONS

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | .12 | .12 | 1.33 | N.S. |
| Age | 1 | .01 | .01 | | |
| Grade | 2 | .20 | .10 | 1.11 | N.S. |
| Sex X Age | 1 | .12 | .12 | 1.33 | N.S. |
| Sex X Grade | 2 | .14 | .07 | | |
| Age X Grade | 2 | .13 | .06 | | |
| Sex X Age X Grade | 2 | .14 | .07 | | |
| Within Cells | 288 | 26.88 | .09 | | |
| Total | 299 | 27.75 | | | |

## TABLE B-30

## ANALYSIS OF VARIANCE FOR TOTAL NUMBER SENTENCES

| Source | df | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|---|
| Sex | 1 | 134.67 | 134.67 | 9.36 | .01 |
| Age | 1 | 41.07 | 41.07 | 2.86 | N.S. |
| Grade | 2 | 124.53 | 62.26 | 4.33 | .05 |
| Sex X Age | 1 | 24.08 | 24.08 | 1.67 | N.S. |
| Sex X Grade | 2 | 169.26 | 84.63 | 5.88 | .01 |
| Age X Grade | 2 | 19.46 | 9.73 | | |
| Sex X Age X Grade | 2 | 45.13 | 22.56 | 1.57 | N.S. |
| Within Cells | 288 | 4140.40 | 14.38 | | |
| Total | 299 | 4698.60 | | | |

# APPENDIX C

## EXAMPLES OF EXPANDED BASIC PATTERNS

### Noun - Verb - Noun

Boys eat apples.
Boys eat apples frequently.
The boys eat apples frequently.
The boys eat apples quite frequently.
The healthy boys eat apples quite frequently.
The healthy boys will eat apples quite frequently.
The healthy boys will usually eat apples quite frequently.
The healthy boys will usually eat chilled apples quite frequently.
The healthy boys of America will usually eat chilled apples quite frequently.

### Noun - Verb (linking) - Noun

Animals are pests.
Animals are often pests.
Some animals are often pests.
Some animals are often pests in a garden.
Some four-footed animals are often pests in a garden.
Some four-footed animals are often considered pests in a garden.
Some four-footed animals are very often considered to be pests in a vegetable garden.

### Noun - Verb (linking) - Adjective

Sam was happy.
Sam was extremely happy.
Big Sam was extremely happy.
Big Sam was extremely happy about his raise.
Big Sam was extremely happy about his raise in salary.

Big Sam, who works very hard, was extremely happy about his raise in salary.
Big Sam, who works very hard cutting grass, was extremely happy about his substantial raise in salary.

### Noun - Verb - Noun - Noun

People feed birds bread.
People feed the birds bread every day.
Many people feed the birds bread every day.
Many people feed the birds bread almost every day.
Many thoughtful people feed the birds bread every day.
Many thoughtful people feed the little birds bread every day.
Many thoughtful people feed the little birds stale bread every day.
Many thoughtful people feed the little birds some stale bread every day.
Many thoughtful people feed the little birds some stale bread every day to keep them from starving.

# APPENDIX D

## PRINT-OUT OF RAW DATA

### Interpretation of raw data print-out

Column 1 = identification number

Column 2 = grade identification
    00 = grade 4
    01 = grade 5
    10 = grade 6

Column 3 = sex identification
    0 = female
    1 = male

Column 4 = age identification
    0 = younger
    1 = older

Column 5 = total number of sentences

Column 6 = total number of sample sentences

Column 7 = total number of N. V. structures

Column 8 = total number of N. V. N. structures

Column 9 = total number of N. V. (l.) Adj. structures

Column 10 = total number of N. V. (l.) N. structures

Column 11 = total number of N.V. N. N. structures

Column 12 = total number of inverted statements

Column 13 = total number inverted questions

Column 14 = total number first layer modifications

Column 15 = total number second layer modifications

Column 16 = total number third layer modifications

Column 17 = total number fourth layer modifications

```
001 00 0 0 05 1 01 12 00 00 01 00 00 00 00 00 00
003 00 0 0 03 0 00 04 00 00 00 00 00 00 00 00 00
004 00 0 0 12 3 07 11 03 00 00 00 00 00 01 00 00
005 00 0 0 09 1 08 06 00 01 01 01 00 00 00 00 00
006 00 0 0 06 2 02 03 02 00 01 02 00 00 00 00 00
010 00 0 0 02 1 00 03 00 00 00 00 00 00 00 00 00
014 00 0 0 08 2 04 05 00 00 02 00 00 00 00 00 00
015 00 0 0 09 2 07 04 01 01 01 00 00 00 01 00 00
016 00 0 0 07 1 04 07 00 00 00 00 00 00 00 00 00
017 00 0 0 11 2 15 04 00 00 01 01 00 00 01 00 00
018 00 0 0 04 1 01 08 00 01 00 00 00 00 01 00 00
022 00 0 0 05 1 02 06 02 00 00 00 00 00 01 00 00
023 00 0 0 04 1 01 04 00 00 00 00 00 00 00 00 00
026 00 0 0 06 1 02 05 03 00 00 00 00 00 01 00 00
027 00 0 0 12 3 12 09 01 00 02 01 00 00 02 01 00
029 00 0 0 14 3 07 13 03 00 01 01 00 00 00 00 00
030 00 0 0 06 1 05 04 00 01 02 00 00 00 01 00 00
032 00 0 0 07 1 03 06 01 00 00 00 00 01 00 00 00
034 00 0 0 09 2 07 11 00 00 00 00 00 00 01 01 00
036 00 0 0 06 1 04 07 00 01 00 00 00 00 00 00 00
037 00 0 0 03 0 01 03 00 00 00 00 00 00 00 00 00
040 00 0 0 16 3 09 15 03 00 00 00 00 00 01 00 00
041 00 0 0 05 1 05 03 02 01 00 01 00 00 01 00 00
045 00 0 0 04 1 00 04 03 01 00 00 00 00 01 00 00
046 00 0 0 03 0 01 03 00 00 00 00 00 00 00 00 00
002 00 0 1 07 2 06 08 00 00 00 00 00 00 00 00 00
007 00 0 1 02 0 02 01 00 01 01 00 00 00 00 00 00
008 00 0 1 07 1 06 09 01 00 00 00 00 00 00 00 00
009 00 0 1 04 1 02 04 00 00 00 01 00 00 00 00 00
011 00 0 1 03 0 01 03 00 00 00 00 00 00 00 00 00
012 00 0 1 04 1 04 06 01 00 00 00 00 00 00 00 00
013 00 0 1 06 1 03 01 00 00 03 00 00 00 00 00 00
019 00 0 1 03 0 03 03 00 00 00 00 00 00 00 00 00
020 00 0 1 04 1 05 02 01 00 00 00 00 00 00 00 00
021 00 0 1 05 1 05 08 00 01 00 00 00 00 01 00 00
024 00 0 1 05 1 05 06 00 00 00 00 00 00 01 00 00
025 00 0 1 06 1 01 07 02 00 00 00 00 00 01 00 00
028 00 0 1 03 0 01 02 00 00 01 02 00 00 00 00 00
031 00 0 1 12 3 05 10 02 02 02 01 00 00 00 01 00
033 00 0 1 05 1 04 07 00 01 00 00 00 00 00 00 00
035 00 0 1 14 3 11 10 01 01 00 00 00 00 01 00 00
038 00 0 1 02 1 00 02 00 01 00 00 00 00 01 00 00
039 00 0 1 05 1 04 05 00 01 01 00 00 00 01 00 00
042 00 0 1 05 1 03 05 01 00 00 02 00 00 00 00 00
043 00 0 1 03 0 01 03 00 00 01 00 00 00 01 00 00
044 00 0 1 07 2 07 09 00 00 02 02 00 00 04 00 00
047 00 0 1 04 1 05 05 00 01 00 00 00 00 00 00 00
048 00 0 1 08 2 09 07 00 00 01 00 00 00 00 00 00
049 00 0 1 06 1 04 04 01 00 02 00 00 00 01 00 00
050 00 0 1 05 1 04 06 00 01 02 01 00 00 01 00 00
```

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053 00 1 0 09 2 01 11 00 02 00 00 00 00 01 00 00
054 00 1 0 04 1 01 05 01 00 00 00 00 00 00 00 00
056 00 1 0-06 1 03 05 00 00 01 00 00 00 00 00 00
059 00 1 0 07 1 03 08 02 00 00 00 00 00 01 00 00
061 00 1 0 05 1 00 04 00 01 02 00 00 00 00 00 00
062 00 1 0 08 2 10 07 00 00 02 01 00 00 01 00 00
066 00 1 0 03 1 01 04 00 00 01 00 00 00 00 00 00
067 00 1 0 02 0 03 02 00 01 00 00 00 00 00 00 00
069 00 1 0 05 1 04 05 00 01 03 00 00 00 00 00 00
073 00 1 0 05 1 03 07 00 01 01 00 00 00 00 00 00
074 00 1 0 04 0 01 04 01 00 00 00 00 00 00 00 00
075 00 1 0 07 2 03 09 01 01 01 01 00 00 02 00 00
076 00 1 0 04 1 03 03 01 00 00 00 00 00 01 00 00
077 00 1 0 01 0 00 01 00 00 00 00 00 00 00 00 00
078 00 1 0 06 1 03 03 01 01 01 00 00 00 00 00 00
079 00 1 0 05 1 04 02 02 00 02 00 00 00 01 00 00
081 00 1 0 05 1 04 05 00 00 00 00 00 00 00 00 00
085 00 1 0 08 2 05 06 00 00 02 00 00 00 00 00 00
087 00 1 0 06 1 01 06 01 00 00 00 00 00 01 00 00
088 00 1 0 06 2 07 07 00 01 00 01 00 00 02 00 00
090 00 1 0 08 1 06 10 00 00 00 00 00 00 00 00 00
094 00 1 0 03 0 01 02 00 00 01 00 00 00 00 00 00
095 00 1 0 09 2 02 08 01 00 00 00 00 00 00 00 00
096 00 1 0 08 2 05 08 02 00 01 01 00 00 01 00 00
097 00 1 0 01 0 02 02 00 00 00 00 00 00 00 00 00
051 00 1 1 07 2 03 13 00 00 00 00 00 01 00 00 00
052 00 1 1 03 0 01 03 01 01 02 00 00 00 00 00 00
055 00 1 1 02 0 02 03 00 00 00 01 00 00 00 00 00
057 00 1 1 03 1 01 05 01 00 00 00 00 00 01 00 00
058 00 1 1 03 1 01 04 00 01 00 00 00 00 01 00 00
060 00 1 1 06 1 01 07 00 02 00 00 00 01 00 00 00
063 00 1 1 07 1 08 05 01 01 03 01 00 00 00 00 00
064 00 1 1 03 1 02 02 00 00 00 00 00 00 00 00 00
065 00 1 1 03 0 01 05 00 00 00 00 00 00 00 00 00
068 00 1 1 04 1 01 05 00 00 00 00 00 00 00 00 00
070 00 1 1 05 1 02 02 01 01 02 00 00 00 00 00 00
071 00 1 1 05 1 00 05 00 00 00 00 00 00 00 00 00
072 00 1 1 02 1 01 04 00 00 00 00 00 00 01 00 00
080 00 1 1 05 1 04 04 00 00 02 00 00 00 01 00 00
082 00 1 1 04 1 01 06 00 00 00 02 00 00 01 00 00
083 00 1 1 08 1 05 08 00 00 01 00 00 00 00 00 00
084 00 1 1 05 1 03 06 00 01 00 02 00 00 01 00 00
086 00 1 1 06 1 07 05 01 01 00 00 00 00 00 00 00
089 00 1 1 05 1 04 04 00 00 00 00 00 00 00 00 00
091 00 1 1 03 1 02 03 02 01 01 00 00 00 01 00 00
092 00 1 1 05 1 03 03 00 00 00 00 00 00 00 00 00
093 00 1 1 05 1 00 06 00 01 01 00 00 01 00 00 00
098 00 1 1 04 1 03 03 00 01 01 00 00 00 01 00 00
099 00 1 1 06 1 03 04 01 00 02 00 00 00 01 00 00
100 00 1 1 11 2 10 04 01 00 00 00 00 01 00 00 00
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101 01 0 0 02 1 03 02 00 00 00 00 00 00 01 00 00
102 01 0 0 17 3 14 17 01 00 00 01 00 00 00 00 00
103 01 0 0 15 3 04 13 00 00 02 00 00 00 00 00 00
107 01 0 0 15 3 11 13 03 00 01 00 00 00 00 00 01
112 01 0 0 04 1 03 03 00 00 01 00 00 00 00 00 01
113 01 0 0 11 2 06 09 00 01 01 01 00 00 00 00 00
114 01 0 0 05 1 06 02 00 00 00 00 00 00 00 00 00
115 01 0 0 06 1 03 05 02 00 00 00 00 00 00 00 00
116 01 0 0 09 2 05 06 01 00 02 00 00 00 00 00 00
119 01 0 0 06 2 02 01 02 00 03 02 00 00 00 00 00
120 01 0 0 03 0 01 03 00 01 00 00 00 00 00 00 00
121 01 0 0 01 0 00 01 00 00 00 00 00 00 00 00 00
123 01 0 0 07 2 03 04 00 00 01 01 00 00 00 00 00
127 01 0 0 05 1 02 04 02 00 00 00 00 01 00 00 00
129 01 0 0 09 2 04 06 00 00 00 00 00 00 00 00 00
130 01 0 0 05 1 02 05 01 00 00 01 00 00 00 00 00
133 01 0 0 13 2 13 11 01 01 02 00 00 01 00 00 00
136 01 0 0 06 1 06 06 01 01 00 02 00 00 01 00 00
137 01 0 0 16 3 12 06 04 00 02 01 00 00 00 00 00
140 01 0 0 06 1 05 06 00 01 02 00 00 00 00 00 01
142 01 0 0 11 3 07 11 07 00 01 01 00 00 01 00 00
144 01 0 0 14 2 10 12 02 02 00 00 00 00 01 00 00
145 01 0 0 05 1 02 08 00 01 00 00 00 00 01 00 00
146 01 0 0 11 3 03 06 02 00 00 00 00 00 00 00 00
150 01 0 0 06 2 01 03 03 01 00 00 00 00 01 00 00
104 01 0 1 12 2 08 08 03 02 01 03 00 00 01 00 00
105 01 0 1 14 3 13 09 05 02 01 01 00 00 03 00 00
106 01 0 1 04 1 01 05 02 01 00 00 00 00 01 00 00
108 01 0 1 06 1 03 10 00 00 00 00 00 00 01 00 00
109 01 0 1 10 2 07 07 01 02 00 03 00 00 01 00 00
110 01 0 1 03 1 07 01 00 01 00 00 00 00 01 00 00
111 01 0 1 05 1 06 04 03 00 00 00 00 00 00 00 00
117 01 0 1 08 1 06 03 02 01 03 00 00 00 00 00 00
118 01 0 1 05 1 04 06 01 01 00 01 00 00 01 00 00
122 01 0 1 15 3 11 10 02 02 00 01 00 00 01 00 00
124 01 0 1 09 2 07 09 00 00 03 01 00 00 00 00 00
125 01 0 1 07 1 08 06 02 01 01 00 00 00 00 00 00
126 01 0 1 08 2 06 07 00 01 02 00 00 00 01 00 00
128 01 0 1 13 2 05 10 02 00 02 02 00 00 01 00 00
131 01 0 1 11 2 07 11 00 00 01 00 00 00 02 00 00
132 01 0 1 10 2 04 09 01 00 04 00 00 00 00 00 00
134 01 0 1 19 4 19 10 02 01 00 00 00 00 00 00 00
135 01 0 1 04 1 05 04 00 00 01 01 00 00 01 00 00
138 01 0 1 07 2 07 03 02 00 00 00 00 00 02 00 00
139 01 0 1 06 1 04 05 00 00 00 00 00 01 00 00 00
141 01 0 1 07 1 00 09 02 00 00 00 00 00 00 00 00
143 01 0 1 05 1 05 07 02 01 00 01 00 00 00 00 00
147 01 0 1 02 0 05 03 00 01 00 00 00 00 00 00 00
148 01 0 1 17 3 06 22 00 02 00 00 00 00 00 00 00
149 01 0 1 05 1 08 04 01 00 01 00 00 00 01 00 00
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151 01 1 0 03 1 00 05 00 00 00 01 00 00 01 00 00
152 01 1 0 02 0 01 02 01 01 00 01 00 00 00 00 00
153 01 1 0 23 5 18 18 03 00 00 00 00 00 00 00 00
154 01 1 0 09 2 05 07 00 00 00 01 00 00 00 00 00
157 01 1 0 08 2 01 07 00 00 00 00 00 01 00 00 00
159 01 1 0 03 1 02 02 00 00 01 00 00 00 00 00 00
160 01 1 0 09 2 05 09 00 00 01 00 00 00 01 00 00
166 01 1 0 03 1 00 02 00 00 01 00 00 00 00 00 00
167 01 1 0 05 1 06 03 00 00 01 00 00 01 01 00 00
168 01 1 0 15 3 08 07 01 00 01 01 00 00 00 00 00
172 01 1 0 05 1 03 05 02 00 01 01 00 00 00 00 00
175 01 1 0 02 0 01 02 00 01 00 00 00 00 00 00 00
176 01 1 0 08 2 03 07 02 00 00 00 00 01 01 00 00
180 01 1 0 11 2 12 11 02 00 01 00 00 00 02 00 00
183 01 1 0 06 1 02 05 01 01 00 01 00 00 00 00 00
184 01 1 0 04 1 03 03 01 00 02 00 00 01 01 00 00
186 01 1 0 01 0 00 01 00 00 01 00 00 00 00 00 00
188 01 1 0 06 1 01 09 01 00 00 00 00 00 00 01 00
189 01 1 0 04 1 02 06 00 00 00 00 00 00 00 00 00
194 01 1 0 07 1 04 09 01 00 00 00 00 00 00 00 00
195 01 1 0 06 1 02 06 03 00 00 00 00 00 01 00 00
197 01 1 0 10 2 06 07 00 00 04 01 00 00 00 00 00
198 01 1 0 02 1 02 01 00 00 00 00 00 00 00 00 00
199 01 1 0 04 1 02 06 00 00 00 00 00 00 00 00 00
200 01 1 0 01 0 00 01 01 01 00 00 00 00 00 00 00
155 01 1 1 01 0 02 01 00 00 00 00 00 00 00 00 00
156 01 1 1 06 1 02 05 01 00 01 00 00 00 00 00 00
158 01 1 1 03 0 00 02 00 00 01 00 00 00 00 00 00
161 01 1 1 04 0 01 03 00 00 00 00 00 00 00 00 00
162 01 1 1 04 1 00 04 00 00 00 00 00 00 00 00 00
163 01 1 1 04 1 00 04 00 01 00 00 00 00 00 00 00
164 01 1 1 04 1 05 05 01 00 00 00 00 00 02 00 00
165 01 1 1 02 0 02 02 00 00 00 00 00 00 00 00 00
169 01 1 1 03 1 01 03 00 00 00 00 00 00 00 00 00
170 01 1 1 00 0 00 00 00 00 00 00 00 00 00 00 00
171 01 1 1 07 1 06 04 00 00 02 00 00 00 00 00 00
173 01 1 1 06 1 02 06 02 01 00 00 00 00 01 00 00
174 01 1 1 06 2 05 05 04 01 00 00 00 00 02 00 00
177 01 1 1 02 0 02 03 00 00 00 00 00 00 00 00 00
178 01 1 1 04 1 03 04 00 00 00 00 00 00 00 00 00
179 01 1 1 02 0 03 02 00 00 01 00 00 00 00 00 00
181 01 1 1 06 2 04 05 00 00 01 00 00 01 01 00 00
182 01 1 1 05 1 03 05 02 01 00 00 00 00 01 00 00
185 01 1 1 02 0 03 02 00 00 00 00 00 00 00 00 00
187 01 1 1 03 1 01 02 00 00 02 00 00 00 00 00 00
190 01 1 1 03 0 03 02 00 00 01 00 00 00 00 00 00
191 01 1 1 07 2 03 06 01 00 01 00 00 00 00 01 00
192 01 1 1 01 0 02 00 00 00 01 00 00 00 00 00 00
193 01 1 1 03 1 01 03 00 01 00 00 00 00 00 00 00
196 01 1 1 01 0 03 00 00 01 00 00 00 00 00 00 00
```

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201 11 0 0 04 1 02 07 01 02 00 01 00 00 02 00 00
208 11 0 0 04 1 01 09 00 00 00 00 00 00 01 01 00
210 11 0 0 18 3 10 12 03 00 00 01 00 00 00 00 00
212 11 0 0 02 1 00 03 00 01 00 00 00 00 01 00 00
213 11 0 0 05 1 03 05 00 00 00 00 00 00 01 00 00
217 11 0 0 11 3 09 05 01 00 02 00 00 00 00 00 00
220 11 0 0 03 0 01 03 02 00 00 00 00 00 00 00 00
222 11 0 0 03 1 05 05 01 02 01 00 00 00 01 00 00
224 11 0 0 06 1 06 05 02 01 01 00 00 00 01 00 00
225 11 0 0 03 1 00 03 00 00 01 00 00 00 00 00 00
226 11 0 0 05 1 02 08 00 00 00 01 00 01 01 00 00
227 11 0 0 06 1 06 05 01 00 00 00 00 00 00 00 00
232 11 0 0 08 2 06 09 03 01 00 00 00 00 02 00 00
233 11 0 0 09 2 08 09 04 00 00 01 00 00 03 00 00
234 11 0 0 06 1 09 05 00 00 00 00 00 00 00 00 00
236 11 0 0 16 3 14 08 01 01 00 00 00 01 00 00 00
237 11 0 0 05 1 03 06 00 00 00 01 00 00 00 00 00
238 11 0 0 02 1 04 03 00 00 00 00 00 00 00 00 00
239 11 0 0 06 1 05 06 00 01 00 00 00 00 01 00 00
242 11 0 0 05 1 06 04 00 00 01 00 00 00 01 00 00
244 11 0 0 05 1 04 07 01 00 00 00 00 00 00 00 00
245 11 0 0 03 1 02 03 00 01 00 00 00 00 00 00 00
246 11 0 0 12 2 08 08 02 01 00 01 00 01 00 00 00
248 11 0 0 11 2 07 09 02 00 00 00 00 00 01 00 00
250 11 0 0 05 1 04 08 00 00 01 00 00 00 00 00 00
202 11 0 1 03 1 06 03 00 00 01 00 00 00 01 00 00
203 11 0 1 16 3 11 09 01 00 04 00 00 00 00 01 00
204 11 0 1 07 1 03 08 01 00 00 00 00 00 01 00 00
205 11 0 1 08 2 10 05 02 02 00 00 00 00 00 00 00
206 11 0 1 05 1 04 04 00 01 00 00 00 00 00 00 00
207 11 0 1 10 2 10 08 01 01 02 00 00 00 00 00 00
209 11 0 1 05 1 03 04 02 01 00 00 00 00 00 00 00
211 11 0 1 06 1 06 04 00 01 00 00 00 00 01 00 00
214 11 0 1 05 1 01 06 02 00 00 01 00 00 02 00 00
215 11 0 1 06 1 03 06 04 01 00 00 00 00 01 00 00
216 11 0 1 07 1 04 06 00 02 01 00 00 00 00 00 00
218 11 0 1 06 1 05 06 01 01 00 00 00 00 01 00 00
219 11 0 1 04 1 04 04 01 01 01 00 00 00 00 00 00
221 11 0 1 05 1 05 05 00 00 01 00 00 00 00 00 00
223 11 0 1 16 3 11 12 01 02 00 00 00 01 01 00 00
228 11 0 1 04 1 04 04 00 01 01 00 00 00 01 00 00
229 11 0 1 06 1 02 05 00 01 00 01 00 00 00 01 00
230 11 0 1 15 3 05 11 03 00 00 04 00 00 01 00 00
231 11 0 1 11 2 10 08 01 02 00 01 00 01 01 00 00
235 11 0 1 11 2 11 14 00 00 02 01 00 00 00 00 00
240 11 0 1 04 1 01 05 01 00 00 00 00 01 01 00 00
241 11 0 1 11 2 08 04 01 01 02 04 00 00 00 00 00
243 11 0 1 02 0 03 01 00 02 02 00 00 00 00 00 00
247 11 0 1 04 1 05 05 00 01 00 00 00 00 02 00 00
249 11 0 1 10 2 06 09 00 01 00 01 00 00 01 00 00
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254 11 1 0 15 3 09 14 02 00 01 00 00 00 00 00 00
255 11 1 0 04 1 03 05 00 00 00 01 00 00 01 00 00
259 11 1 0 14 3 06 10 01 01 00 00 00 00 00 00 00
263 11 1 0 10 2 02 12 01 01 03 00 00 00 01 00 00
264 11 1 0 05 1 05 04 01 00 01 00 00 01 01 00 00
265 11 1 0 06 1 02 06 00 01 00 04 00 00 01 00 00
267 11 1 0 04 0 02 04 00 01 01 00 00 00 00 00 00
269 11 1 0 09 2 01 07 01 00 00 04 00 00 00 00 00
270 11 1 0 05 1 02 01 02 01 01 01 00 00 01 00 00
272 11 1 0 08 2 04 08 01 00 00 00 00 01 00 00 00
274 11 1 0 09 1 04 05 02 04 01 00 00 00 00 00 00
275 11 1 0 08 2 08 06 01 01 02 01 00 00 02 00 00
277 11 1 0 04 1 04 05 00 00 00 00 00 00 01 00 00
279 11 1 0 09 1 06 07 00 01 03 00 00 00 00 00 00
280 11 1 0 05 1 04 05 00 00 01 00 00 00 00 00 00
284 11 1 0 11 2 08 10 03 00 00 00 00 00 00 00 00
285 11 1 0 10 2 11 09 00 02 00 00 00 00 00 00 00
289 11 1 0 05 1 02 05 00 00 00 00 00 00 00 00 00
291 11 1 0 04 1 06 05 00 01 00 00 00 00 01 00 00
292 11 1 0 04 1 01 03 00 00 01 00 00 00 00 00 00
293 11 1 0 03 0 04 03 00 00 00 00 00 00 00 00 00
294 11 1 0 03 1 01 04 01 01 00 00 00 00 02 00 00
295 11 1 0 13 3 04 18 04 00 01 00 00 00 00 01 01
296 11 1 0 14 2 03 08 01 00 02 00 00 00 00 00 01
299 11 1 0 15 3 13 05 02 00 01 00 00 00 01 00 00
251 11 1 1 10 2 07 04 04 00 02 01 00 00 00 00 00
252 11 1 1 06 1 05 06 01 00 00 00 00 00 00 00 00
253 11 1 1 05 1 03 03 02 00 01 00 00 01 00 00 00
256 11 1 1 09 2 03 12 01 02 00 00 00 00 02 00 00
257 11 1 1 16 3 10 12 06 01 00 00 00 00 00 00 01
258 11 1 1 05 1 04 07 00 00 00 00 00 00 02 00 00
260 11 1 1 22 4 08 18 01 02 00 04 00 00 00 00 01
261 11 1 1 07 2 03 10 00 04 00 00 00 00 01 00 00
262 11 1 1 06 1 06 05 01 00 00 00 00 00 01 00 01
266 11 1 1 07 2 02 09 00 00 00 00 00 02 01 00 00
268 11 1 1 04 1 01 03 00 01 00 00 00 00 01 00 00
271 11 1 1 05 1 04 06 00 01 01 00 00 00 01 00 00
273 11 1 1 05 1 01 04 00 01 01 00 00 00 00 00 00
276 11 1 1 11 2 05 06 01 01 03 00 00 00 01 00 00
278 11 1 1 03 1 02 03 02 00 01 00 00 00 02 00 00
281 11 1 1 03 1 01 03 01 01 00 00 00 00 00 00 00
282 11 1 1 02 0 01 01 00 00 01 00 00 00 00 00 00
283 11 1 1 03 1 00 03 00 01 00 00 00 00 01 00 00
286 11 1 1 09 2 06 12 01 00 02 00 00 00 02 00 01
287 11 1 1 03 1 02 03 00 00 00 00 00 00 01 00 00
288 11 1 1 00 0 00 00 00 00 00 00 00 00 00 00 00
290 11 1 1 13 2 12 07 05 03 00 00 00 00 00 01 00
297 11 1 1 04 1 01 02 00 01 01 00 00 00 01 00 00
298 11 1 1 03 1 02 05 00 00 01 00 00 00 01 00 00
300 11 1 1 07 1 03 08 01 03 00 01 00 00 00 01 00
AUG 06 65        21 49.7
```

# APPENDIX E

## SAMPLE COMPOSITIONS FOR FOURTH GRADE, FIFTH GRADE, SIXTH GRADE

### Fourth Grade

If I were Martha I'd go to the nearest neighbor and get help. I'd ask Tom to run to the well with a bucket to get water to try and put the fire out. While I was at the neighbor's house to get help I'd also ask if they knew any way in which they could get in touch with either my father or mother. If the neighbor said "Yes", I'd get in touch with them and then they would come home and they would put the fire out.

## Fifth Grade

"Quick", said Tom, "call the neighbors and tell them to bring buckets to get water from the spring." Martha did just as Tom told her to and in a few minutes there was a long line from the spring to Tom and Martha's house. In no more than fifteen minutes the fire was out with hardly anything destroyed. Tom asked the men to stay and help him build a roof from logs. A lot of men did stay and the chore was finished by sun down. The next day Tom's father came home and was very proud of him.

## Sixth Grade

If I were Tom or Martha I would attempt to get all the valuable goods in or near the cabin away from the fire as quickly as possible. Then I would try to dig a ditch around the logs and the valuable goods and fill it with water. I would then attempt to put out the major portions of the fire that directly threatened any or all of the valuable goods. Then I would clear away inflammable brush near all these valuables so that if a wind would suddenly spring up and a spark put these bushes on fire they wouldn't be blown into the valuable goods and ignite them. Then, if I were Tom I would send Martha, if she were a fast runner, to get mother. If Martha was a fairly slow runner I would have her try to keep the fire under some sort of control while I went to get mother and the sick neighbor's husband if he were there to help put out the fire. Then I would try to get enough men and buckets to put the fire out with a bucket brigade.

# BIBLIOGRAPHY

# BIBLIOGRAPHY

Anderson, John E. "An evaluation of various indices of linguistic development", Child Development, VIII (March, 1937), 62-68.

Bear, Mata V. "Children's growth in written language", Elementary English Review, XVI (1939), 312-319.

Borg, Walter R. Educational research. New York: David McKay Co. Inc., 1963.

Braddock, R., Lloyd-Jones, R., & Schoer, L. Research in written composition. Champaign, Illinois: National Council of Teachers of English, 1963.

Brueckner, L. "Language, the development of ability in oral and written composition", Thirty-eighth Yearbook of the National Society for the Study of Education, (1939), 225-240.

Boyd, W. "The development of sentence structure in childhood", British Journal of Psychology (General Section) XVII (January, 1927), 181-191.

Burns, Paul C. "Language arts research that should make a difference", Elementary English, XLI (March, 1964), 279-284 and 288.

Burrows, Alvina T. What research says to the teacher - teaching composition. Washington, D. C.: National Education Association, (April), 1959.

Carroll, John B. "Language development in children", S. Saporta (Ed.), Psycholinguistics. New York: Holt, Rinehart & Winston, 1961. 331-345.

Chomsky, N. "The independence of grammar", S. Saporta (Ed.) Psycholinguistics. New York: Holt, Rinehart & Winston, 1961. 34-37.

Chotlos, John W. "Studies in language behavior IV. A statistical and comparative analysis of individaul written language samples." Psychological Monographs, LVI (1944), 77-111.

Christensen, F. "Notes on a new rhetoric". College English, XXV (October, 1963), 7-18.

Conlin, David A. Grammar for written English. Boston: Houghton Mifflin Co., 1961.

Davis, Edith A. "Mean sentence length compared with long and short sentences as a reliable measure of language development." Child Development, VIII (1937), 69-79.

Edmond, Neal R. "Writing in the intermediate grades". Elementary English, XXXVI (November, 1959), 491-501.

Edwards, Allen L. Experimental design in psychological research. New York: Rinehart & Co., 1954.

Fea, Henry R. "Some relationships among abilities in oral language, written language, and reading of intermediate grade child". Unpublished doctoral dissertation, University of California, 1950.

Fries, Charles C. The structure of English: an introduction to the construction of English sentences. New York: Harcourt, Brace and Co., 1952.

Frogner, Ellen. "Problems of sentence structure in pupil's themes". English Journal, XXII (1933).

Harrell, Lester E. "A comparison of the development of oral and written language in school age children". Monographs of the Society for Research in Child Development, XXVI, 3 (1957).

Hatchett, Ethel L., Hughes, Donald. Teaching language arts in elementary schools. New York: The Ronald Press, 1956.

Heider, Fritz & Heider, Grace M. "A comparison of sentence structure of deaf and hearing children". Psychological Monographs, LII, 232 (1940), 42-103.

Herrick, Virgil E. & Leary, B. "Children's language development and home and school practices". Elementary English, XXX (October, 1953), 361-373.

Hoppes, William C. "Considerations on the development of children's language". Elementary English Review, XI (March, 1934), 66-70.

_______. "Some aspects of growth in written expression". Elementary English Review, X (1933), 67-70 and 121-123.

Hunt, Kellog W. Differences in grammatical structures written at three grade levels. Florida State University, Cooperative Research Project 1998, 1964.

LaBrant, Lou L. "A study of certain language developments of children in grades four through twelve". Genetic Psychology Monograph, XIV (1933), 387-491.

_______. "Changing sentence structure of children". Elementary English Review, XI (March, 1934), 59-65 and 85-86.

Lull, H. G. "The speaking and writing abilities of intermediate grade pupils". Journal of Educational Research, XX (June, 1929), 73-77.

Loban, W. Language ability in the middle grades of the elementary school. Final report to the United States Office of Education, NO. SAE 7287, 1961.

Loban W. *The language of elementary school children: A study of the use and control of language and the relationships among speaking, reading, writing and listening.* National Council of Teachers of English Research Report (1), 1963.

McCarthy, Dorothea. "Language development in children", *Manual of child psychology*, R. Carmichael (Ed.). New York: John Wiley & Sons, Inc., 1954, 492-630.

Meckel, Henry C. "Research on teaching composition and literature". N. L. Gage (Ed.), *Handbook of research on teaching*. Chicago: Rand McNally Co., 1963, 966-1006.

National Council of Teachers of English, Commission for English. *Language arts for today's children*. National Council of Teachers of English Curriculum Series, Vol. II. New York: Appleton, Century Croft, Inc., 1954.

Nice, M. M. "An analysis of the conversation of children and adults". *Child Development*, III (September, 1932), 240-246.

Pennsylvania, Commonwealth of, Department of Public Instruction. *The elementary course of study* (233B), 1949.

Postal, Paul M. "Underlying and superficial linguistic structure". *Harvard Educational Review*, XXXIV (2) (1964), 246-266.

Roberts, P. *English sentences*. New York: Harcourt, Brace & World, Inc., 1962.

_______. *Patterns of English*. New York: Harcourt, Brace & World, Inc., 1956.

Sam, Norman H. "Written language development of intermediate grade children". Unpublished doctoral dissertation, University of Pittsburgh, 1962.

Servey, Richard E. "The effect of stimulation on the quality of children's writing". Unpublished doctoral dissertation, University of Southern California, 1959.

Smith, Dora V. "Basic considerations in curriculum making in language arts". *English Journal*, XXXVII (1938), 115-126.

________. "Growth in language power as related to child development". *Teaching Languages in the Elementary School, Forty-third Yearbook*, Part II. Chicago: National Society for the Study of Education, 1944.

Strickland, Ruth G. *The language of elementary school children: Its relationship to the language of reading textbooks and the quality of reading of selected children*. Bulletin of the School of Education Indiana University, XXXVIII (4).

________. "Implications of research in linguistics for elementary teaching". *Elementary English*, (2) (February, 1963), 168-171.

Templin, Mildred C. *Certain language skills in children: Their development and interrelationships*. Minneapolis: The University of Minnesota Press, 1957.

Wise, Harold L. "An analysis of the written language of children in grade 1, 2, and 3". Unpublished master's thesis, University of Iowa, 1959.

Young, Florence. "An analysis of certain variables in a developmental study of language". *Genetic Psychology Monographs*, XXIII (1941), 3-141.

Zyve, C. I. "Conversation among children". *Teachers College Record*, XXIX (1927), 46-61.